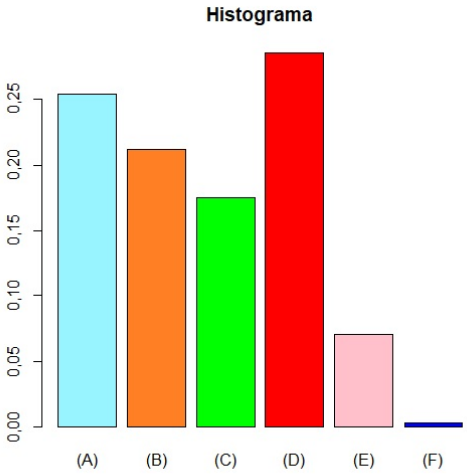
Análise do item 1

Item 1. Sejam os intervalos $A = [2; 7]$ e $B = [5; 9)$. Então:



(a) $A \cup B = [2; 9]$

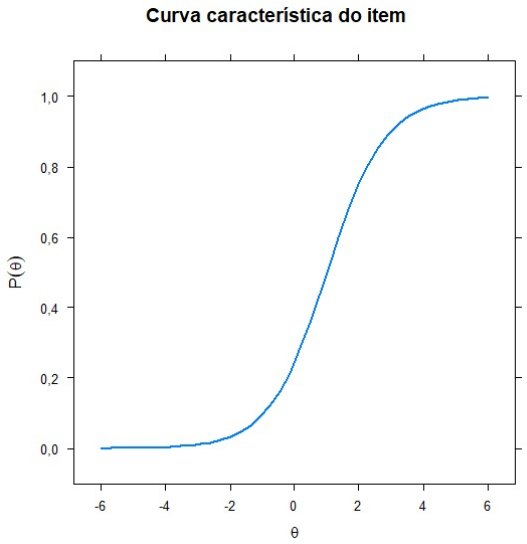
(b) $A \cap B = [5; 7)$

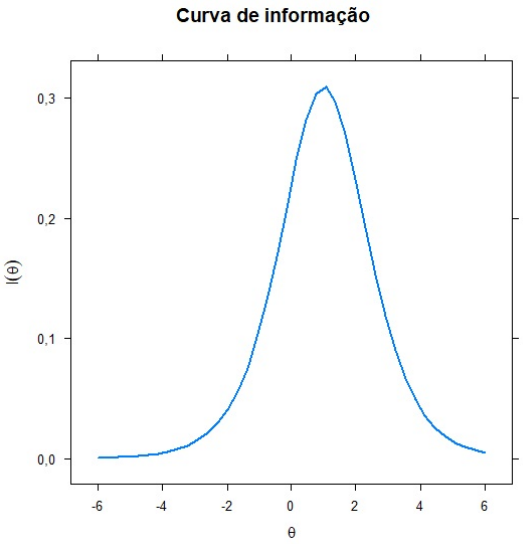
(c) $A - B = [2; 5]$

(d) $\boxed{B - A = (7; 9)}$

(e) não sei

Tópico: Operações entre conjuntos.





Análise do item 2

Item 2. O máximo divisor comum (MDC) de 198 e 154 é:

(a) 11

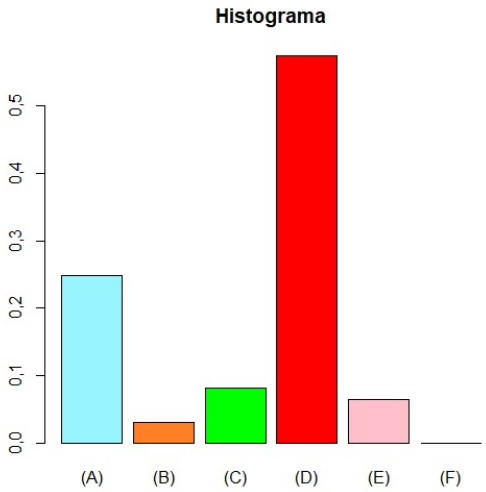
(b) 33

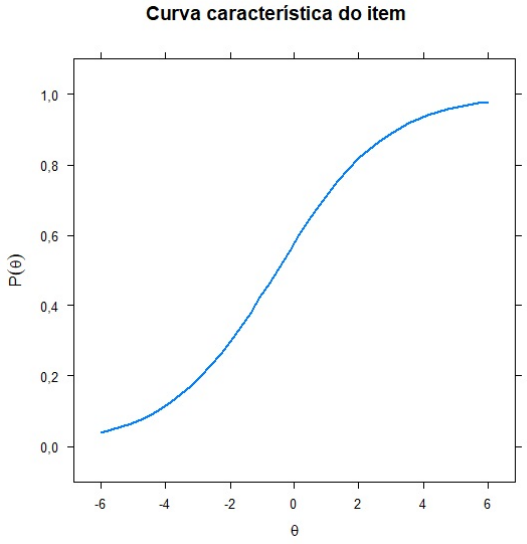
(c) 44

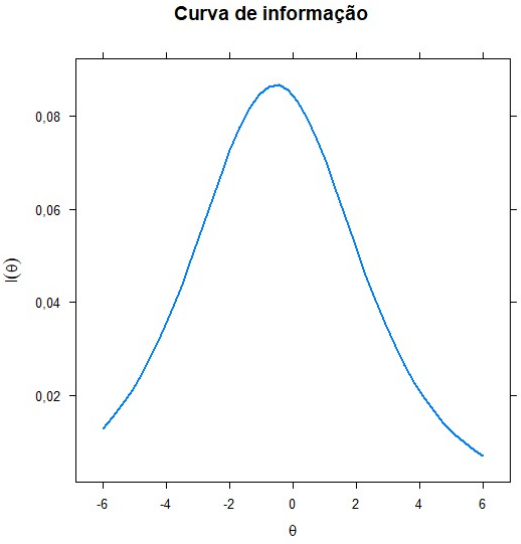
(d) 22

(e) não sei

Tópico: Potenciação e radiciação. Racionalização.







Análise do item 3

Item 3. É equivalente à $\frac{7}{8}$:

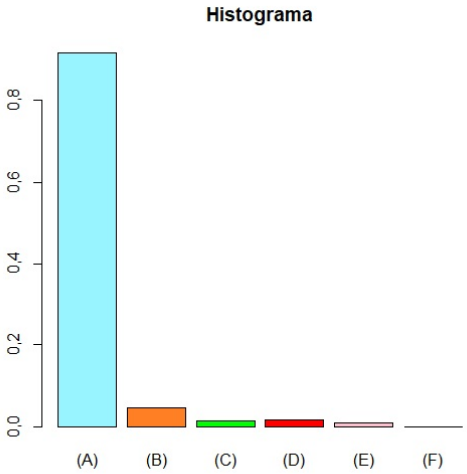
(a) $\boxed{0,875}$

(b) $0,9$

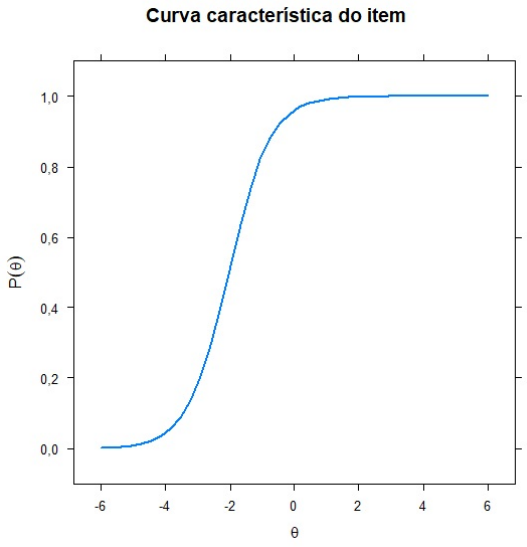
(c) $1,14$

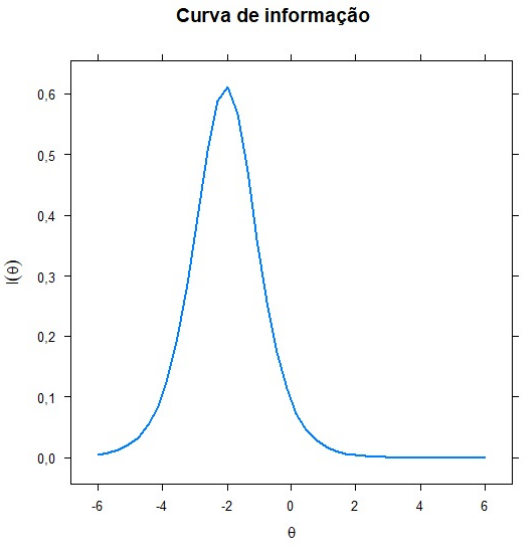
(d) $0,98$

(e) não sei



Tópico: Expressão numérica.





Análise do item 4

Item 4. $\sqrt{9}$ é igual a:

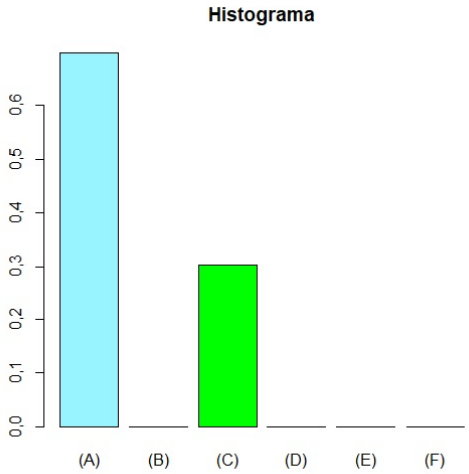
(a) $\boxed{3}$

(b) -3

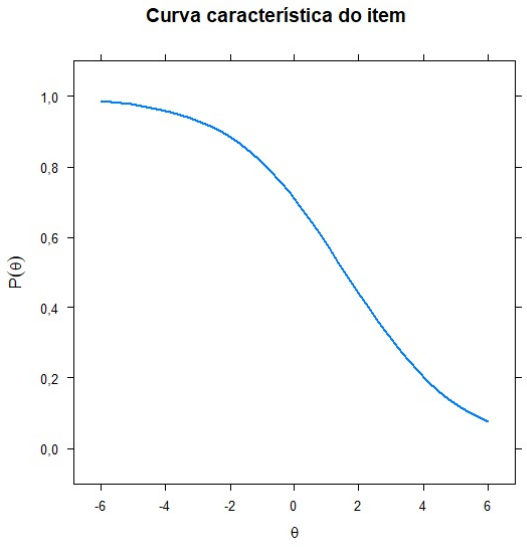
(c) ± 3

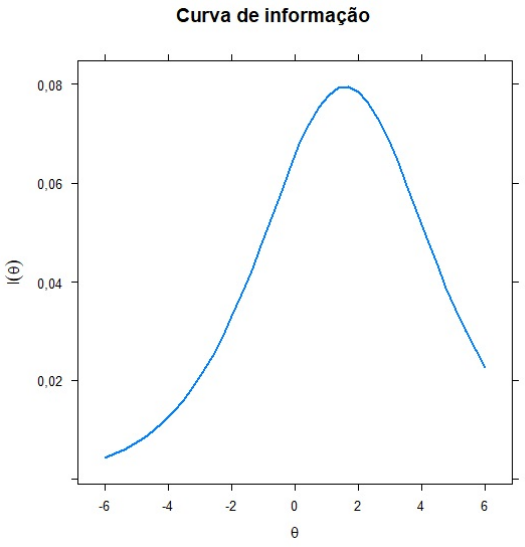
(d) 9

(e) não sei



Tópico: Expressão numérica.





Análise do item 5

Item 5. Calcule: $\left(\frac{1}{2}\right) : \left(-\frac{3}{8}\right)$

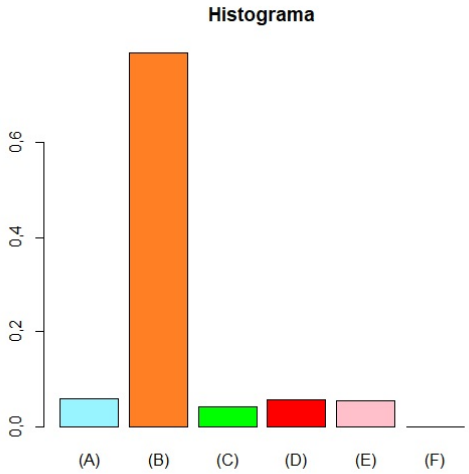
(a) $\frac{4}{3}$

(b) $\boxed{-\frac{4}{3}}$

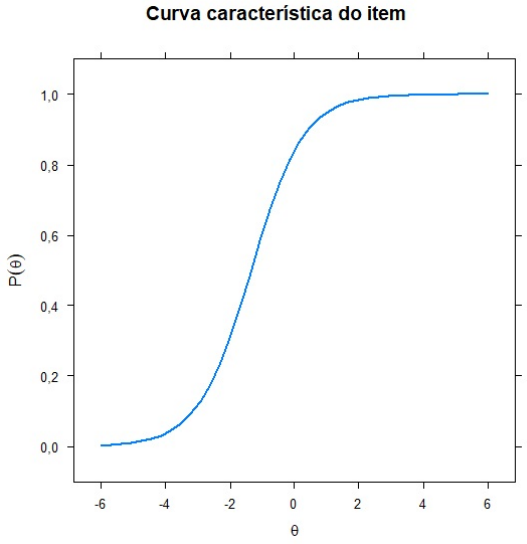
(c) $\frac{4}{3}$

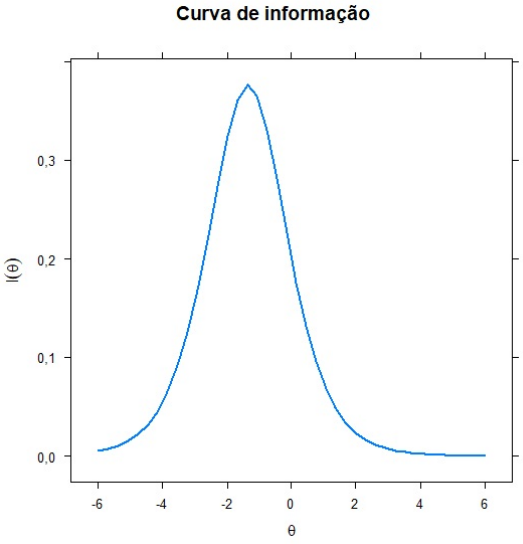
(d) $-\frac{7}{6}$

(e) não sei



Tópico: Expressão numérica.





Análise do item 6

Item 6. Marque a afirmação falsa:

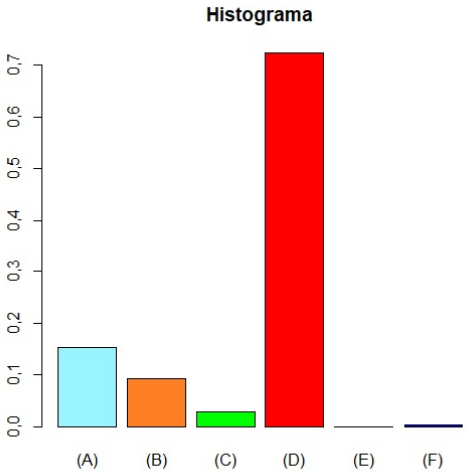
(a) $2 \leq 2$

(b) $\frac{8}{3} > \frac{9}{4}$

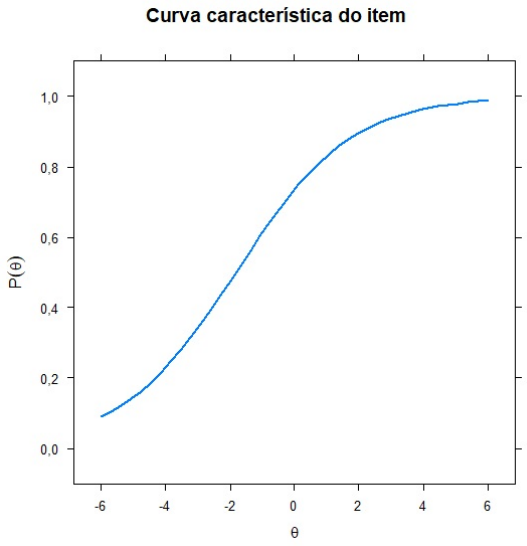
(c) $\sqrt{2} > 1,14$

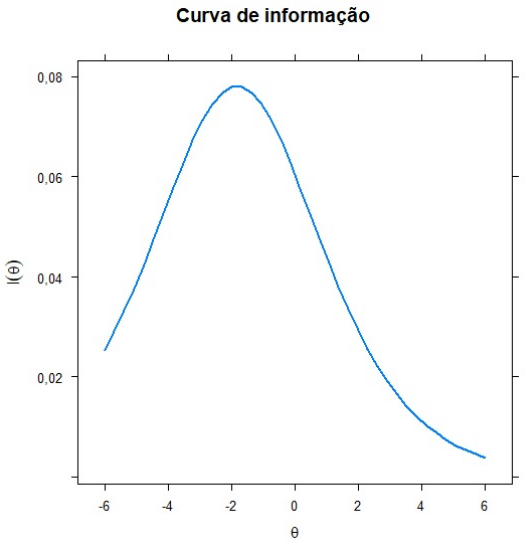
(d) $\boxed{-4 > -3}$

(e) não sei



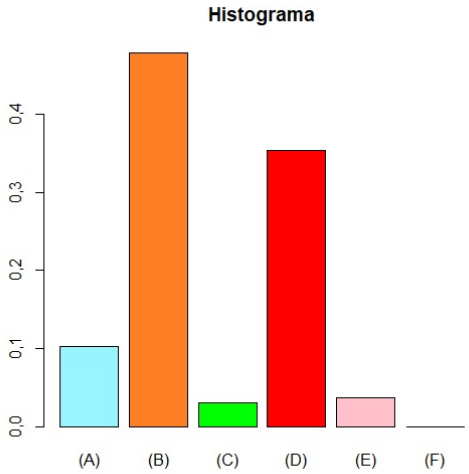
Tópico: Conjuntos dos números reais e propriedades.





Análise do item 7

Item 7. A expressão $-18 < -6x < 12$ é equivalente à:



(a) $-3 < x < -2$

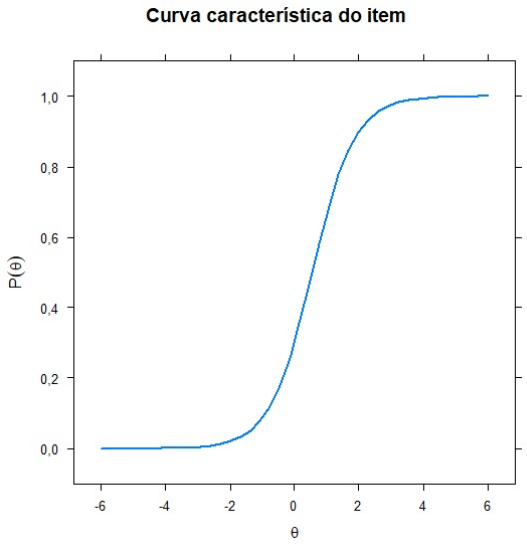
(b) $-3 < x < 2$

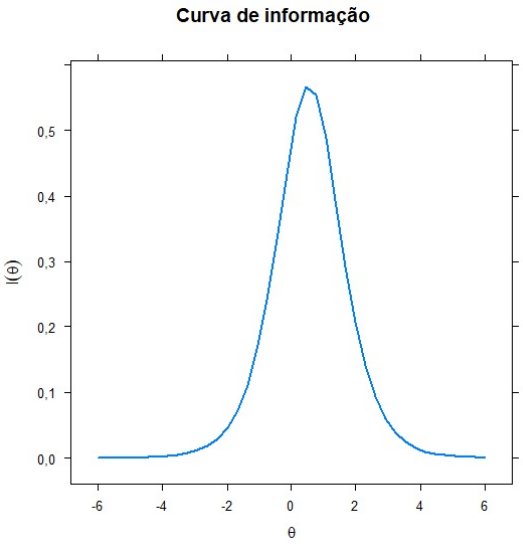
(c) $2 < x < 3$

(d) $\boxed{-2 < x < 3}$

(e) não sei

Tópico: Intervalos.





Análise do item 8

Item 8. A fração $\dfrac{a+b}{c+d}$ é equivalente à:

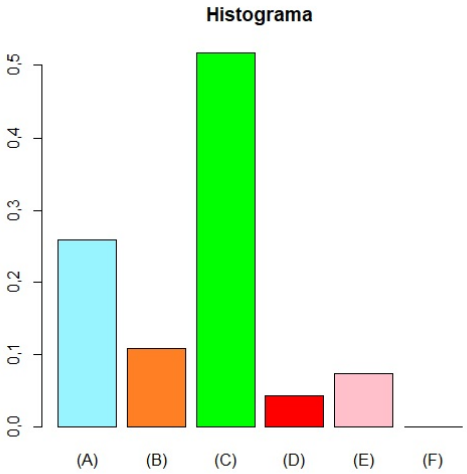
(a) $\dfrac{a}{c}+\dfrac{b}{d}$

(b) $\dfrac{a+b}{c}+\dfrac{a+b}{d}$

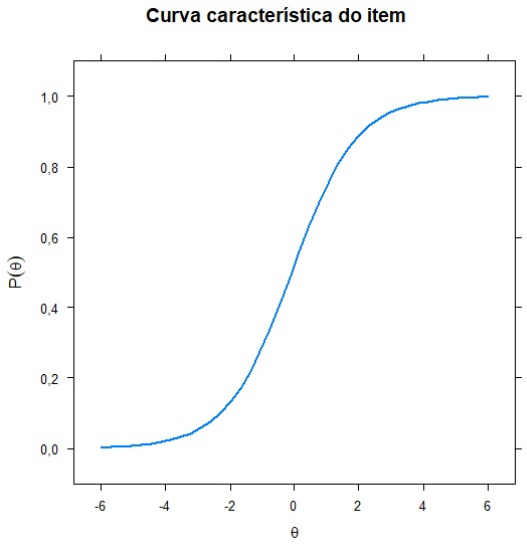
(c) $\boxed{\dfrac{a}{c+d}+\dfrac{b}{c+d}}$

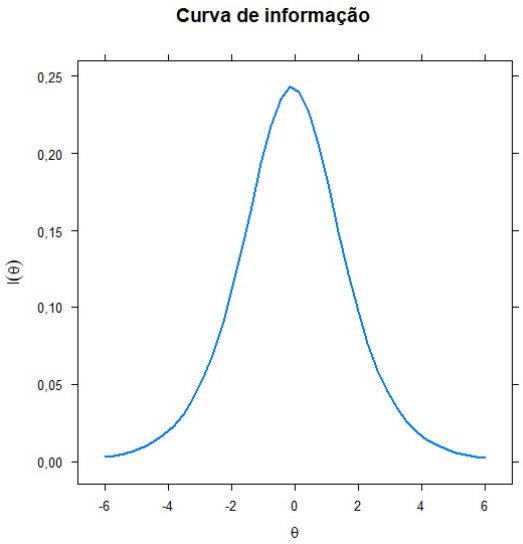
(d) $\dfrac{a}{d}+\dfrac{b}{c}$

(e) não sei



Tópico: Expressões algébricas: operações e valor numérico.





Análise do item 9

Item 9. É equivalente à $(2x + y)(y - 3x)$:

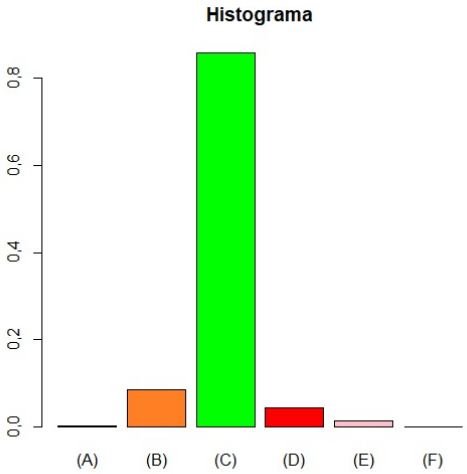
(a) $-xy$

(b) $6x^2 + y^2 - xy$

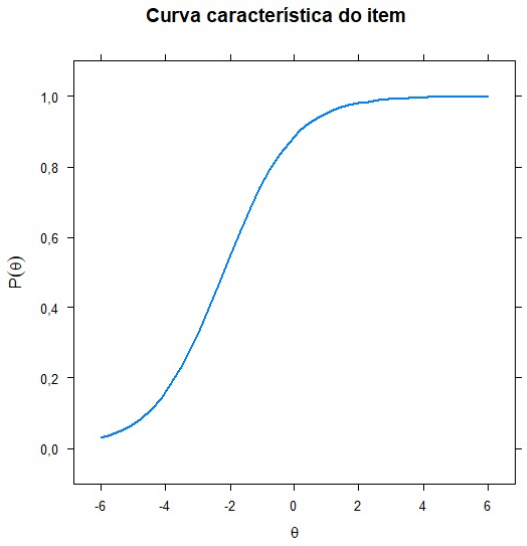
(c) $\boxed{-6x^2 + y^2 - xy}$

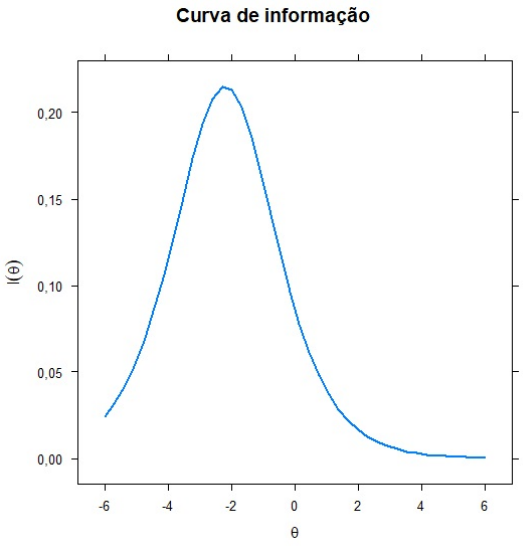
(d) $-6x^2 + y^2$

(e) não sei



Tópico: Expressões algébricas: operações e valor numérico.





Análise do item 10

Item 10. Simplifique: $\dfrac{28 + 12 \div 4 \cdot 2^2}{3 \cdot 2^4}$

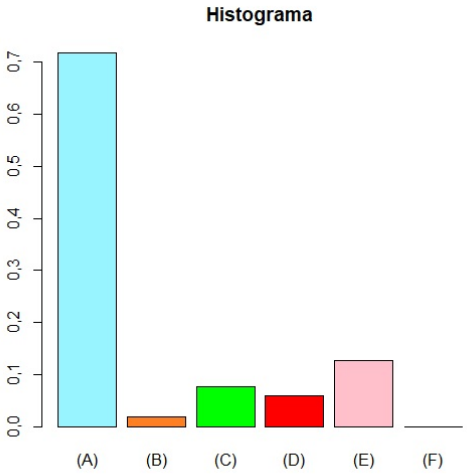
(a) $\boxed{\frac{5}{6}}$

(b) 1

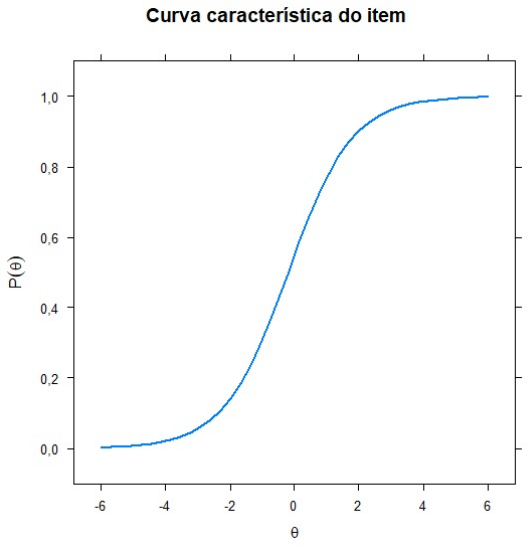
(c) $\frac{3}{5}$

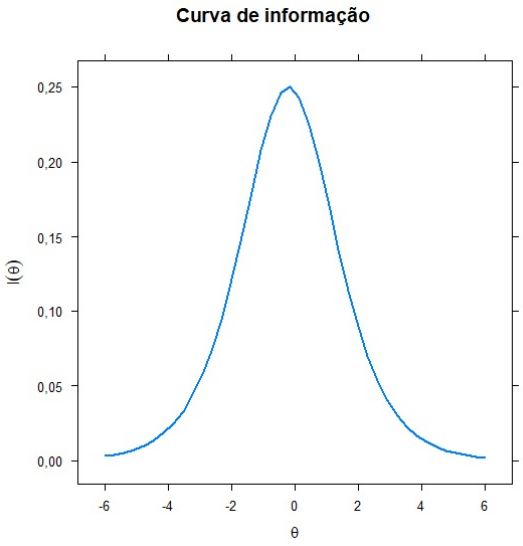
(d) $\frac{1}{3}$

(e) não sei



Tópico: Expressões algébricas: operações e valor numérico.





Análise do item 11

Item 11. Simplifique: $\dfrac{0,04 \cdot 0,01}{0,004}$

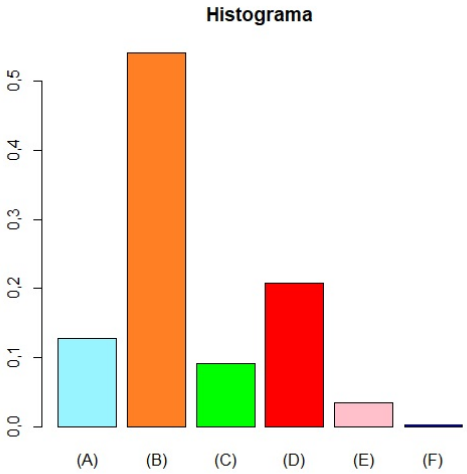
(a) $0,01$

(b) $\boxed{0,1}$

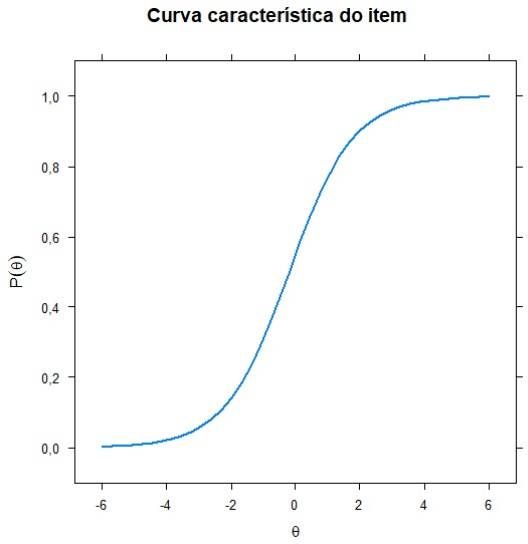
(c) $0,001$

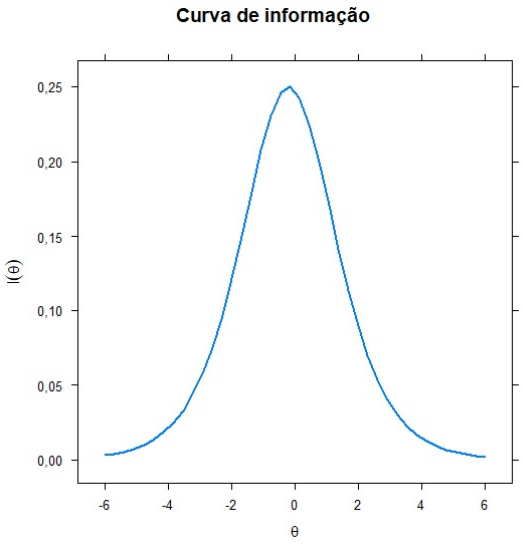
(d) 1

(e) não sei



Tópico: Expressões algébricas: operações e valor numérico.





Análise do item 12

Item 12. Fatore: $2(3x+1)^7 - 16x(3x+1)^6$

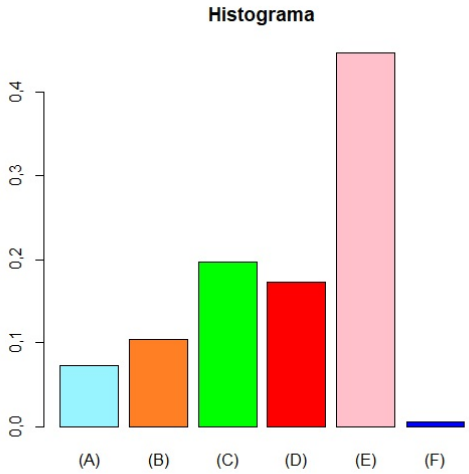
(a) $2(3x+1)^6(1+11x)$

(b) $\boxed{2(3x+1)^6(1-5x)}$

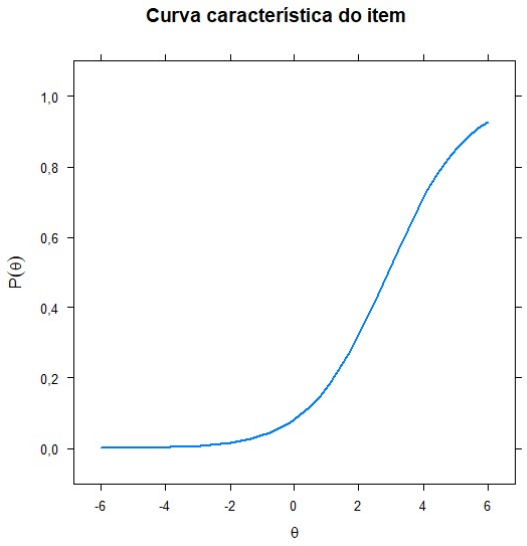
(c) $2(3x+1)^6(1-4x)$

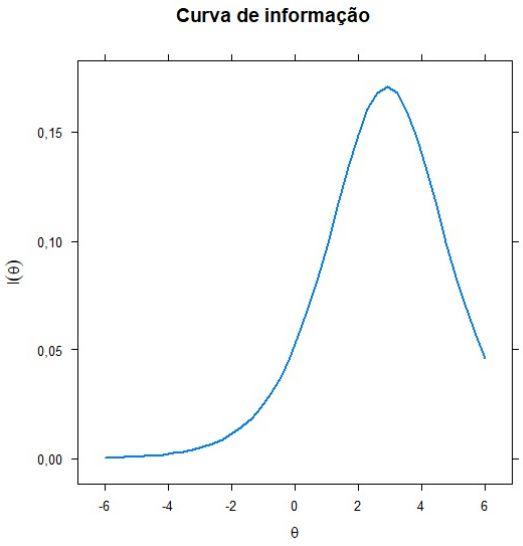
(d) $2(3x+1)^6(1-11x)$

(e) não sei



Tópico: Expressões algébricas: operações e valor numérico.





Análise do item 13

Item 13. Simplifique: $\dfrac{-3xy^2 + 15x^2 - 12y^2}{-3xy^2}$

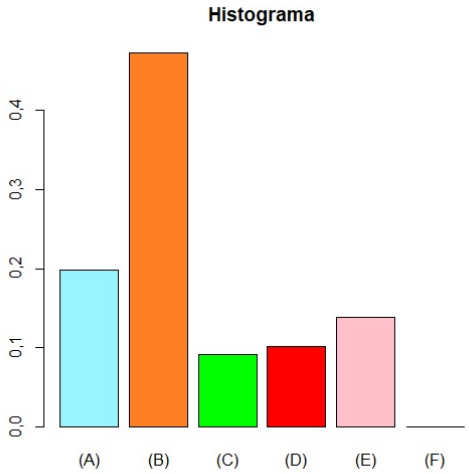
(a) $1 + 15x^2y - 12y^2$

(b) $\boxed{1 - \dfrac{5x}{y^2} + \dfrac{4}{x}}$

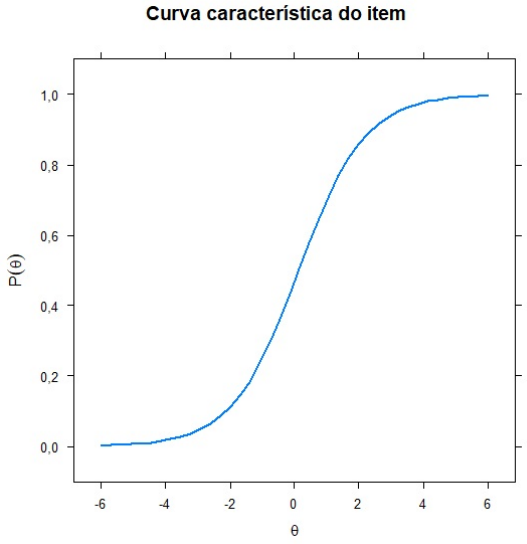
(c) $1 + \dfrac{5x}{y} + \dfrac{4}{x}$

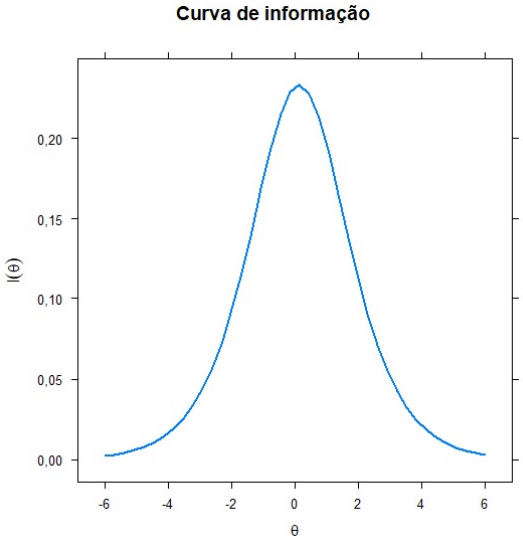
(d) $1 + \dfrac{5x}{y} - \dfrac{4}{x}$

(e) não sei



Tópico: Fatoração e simplificação de expressões algébricas.





Análise do item 14

Item 14. Simplifique: $\dfrac{x^2+2x-8}{x^2-4}$

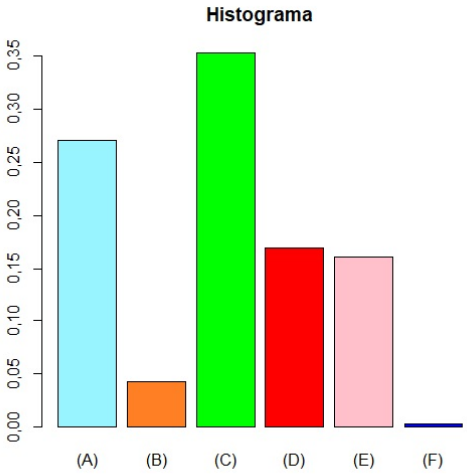
(a) $\dfrac{x-4}{x-2}$

(b) $\dfrac{x+6}{x+2}$

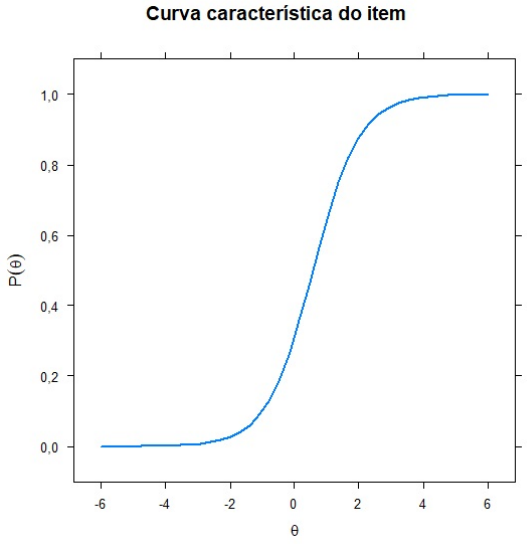
(c) $\boxed{\dfrac{x+4}{x+2}}$

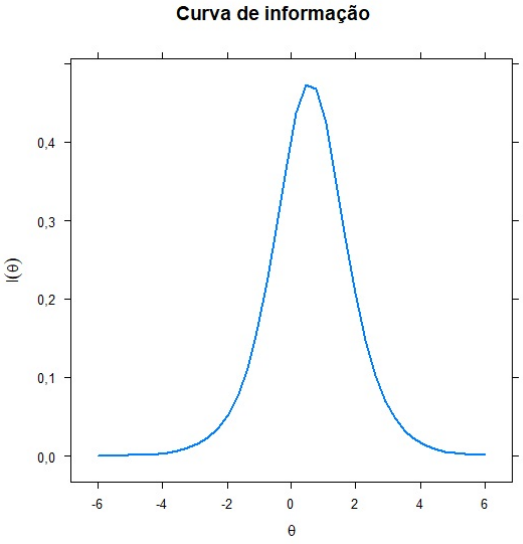
(d) $1+2x+2$

(e) não sei



Tópico: Fatoração e simplificação de expressões algébricas.





Análise do item 15

Item 15. Se $x \neq 9$, uma expressão equivalente à $\dfrac{\sqrt{x}-3}{x-9}$ é:

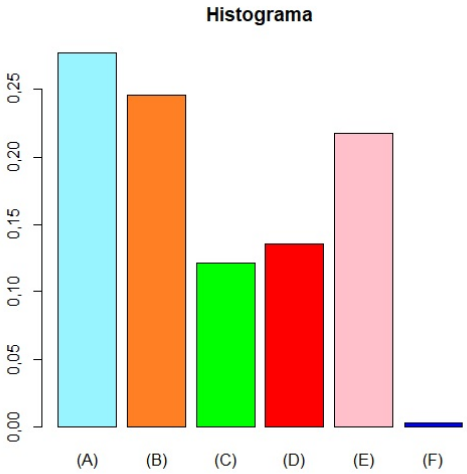
(a) $\boxed{\dfrac{1}{\sqrt{x}+3}}$

(b) $\dfrac{1}{\sqrt{x}-3}$

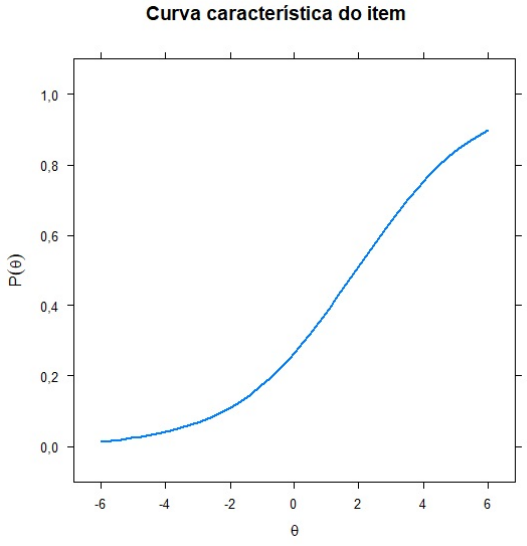
(c) $\dfrac{1}{x+3}$

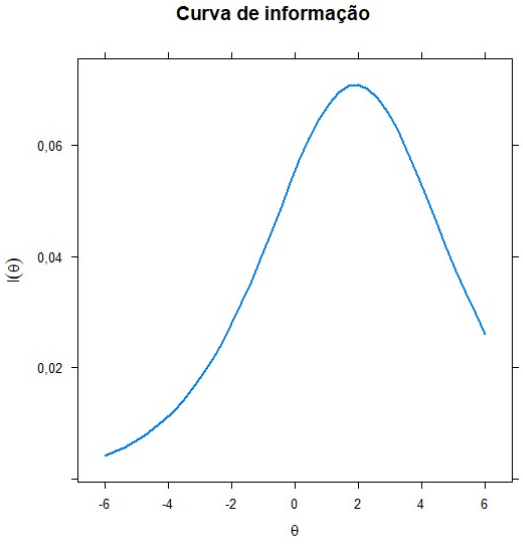
(d) $\dfrac{1}{x-3}$

(e) não sei



Tópico: Fatoração e simplificação de expressões algébricas.





Análise do item 16

Item 16. Simplifique: $\dfrac{1}{1-x} - \dfrac{1}{2x-2}$

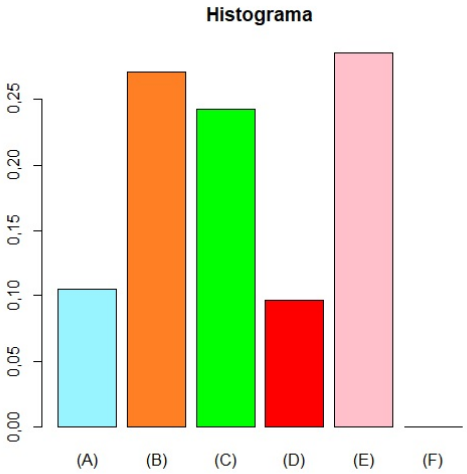
(a) $\dfrac{3}{2x+2}$

(b) $-\dfrac{3}{2x+2}$

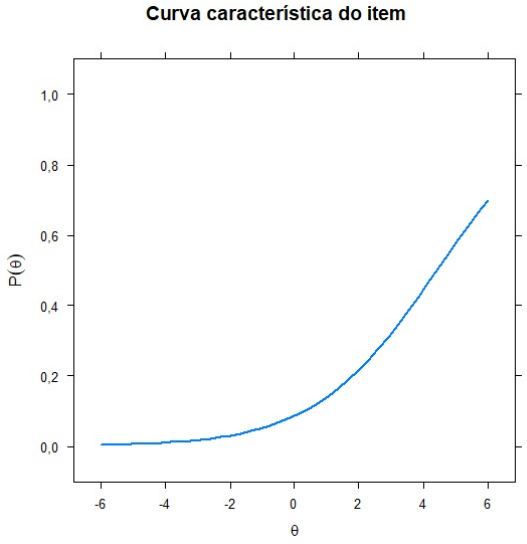
(c) $\dfrac{3}{2x-2}$

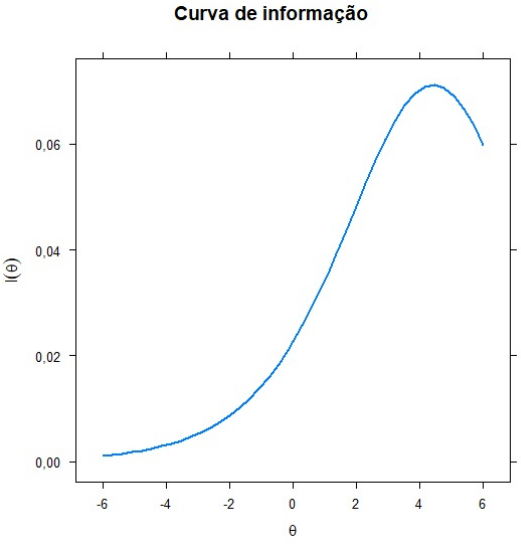
(d) $\boxed{\dfrac{3}{2-2x}}$

(e) não sei



Tópico: Fatoração e simplificação de expressões algébricas.





Análise do item 17

Item 17. Um dos fatores irredutíveis da expressão polinomial $81t^4 - 625$:

(a) $9t + 5$

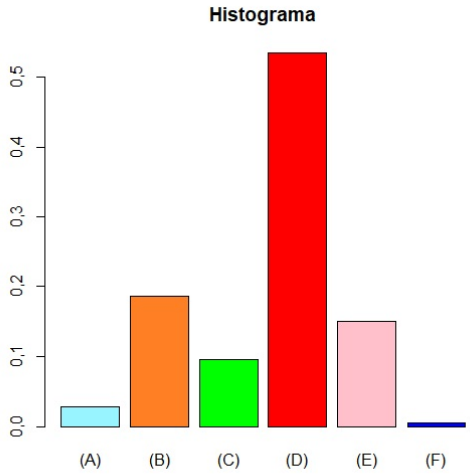
(b) $9t - 5$

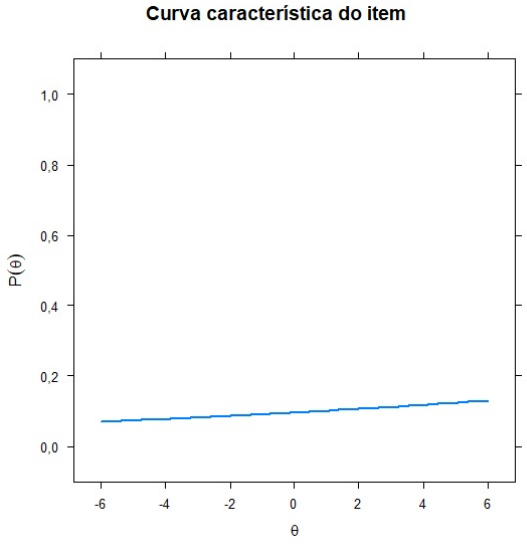
(c) $\boxed{9t^2 + 25}$

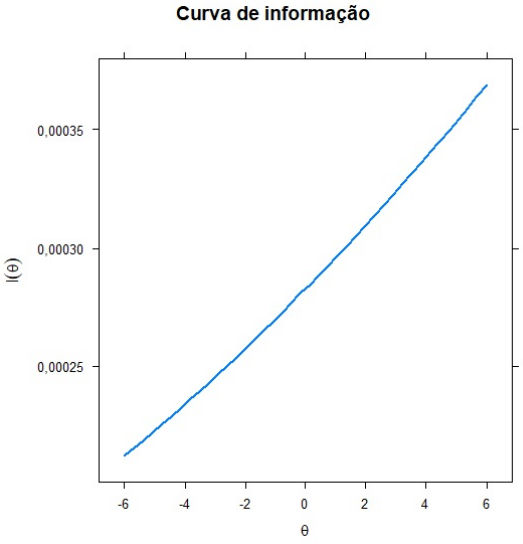
(d) $9t^2 - 25$

(e) não sei

Tópico: Fatoração e simplificação de expressões algébricas.







Análise do item 18

Item 18. Para $x < 0$, é equivalente à $\dfrac{\sqrt{x^2+1}}{x^2}$:

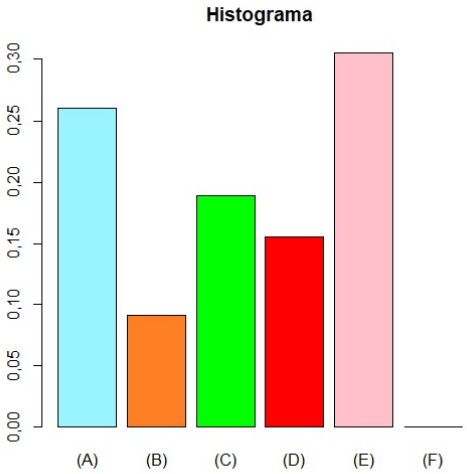
(a) $\dfrac{1}{\sqrt{x^2+1}}$

(b) $-\sqrt{1+x^{-2}}$

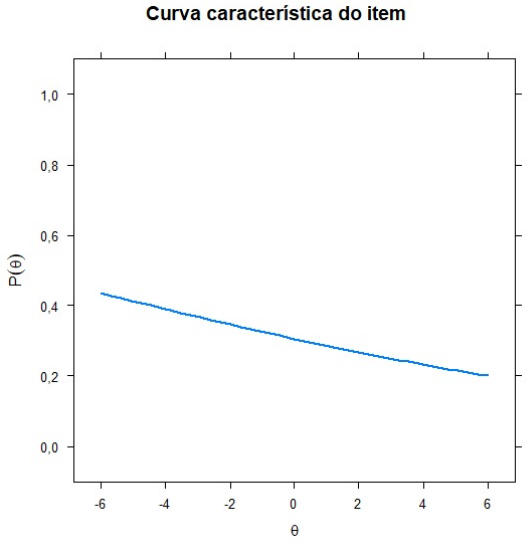
(c) $\sqrt{1+x^{-2}}$

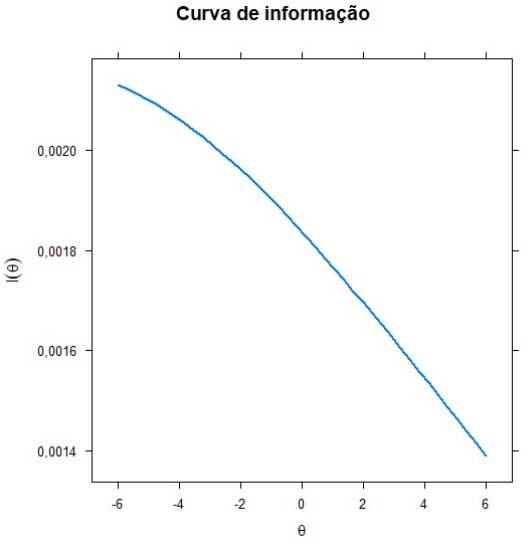
(d) $-\dfrac{1}{\sqrt{x^2+1}}$

(e) não sei



Tópico: Fatoração e simplificação de expressões algébricas.





Análise do item 19

Item 19. É equivalente a afirmação: “A distância entre x e 3 é pelo menos igual a 2"

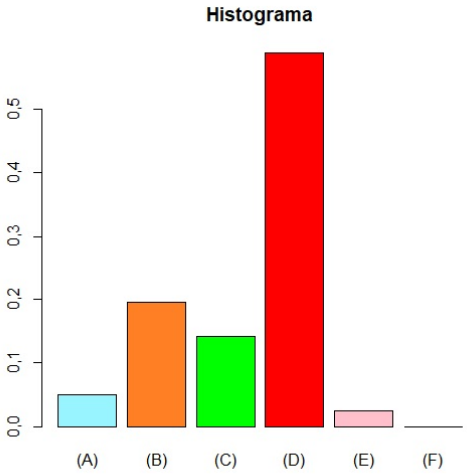
(a) $|x-2| \geq 3$

(b) $|x+3| \geq 2$

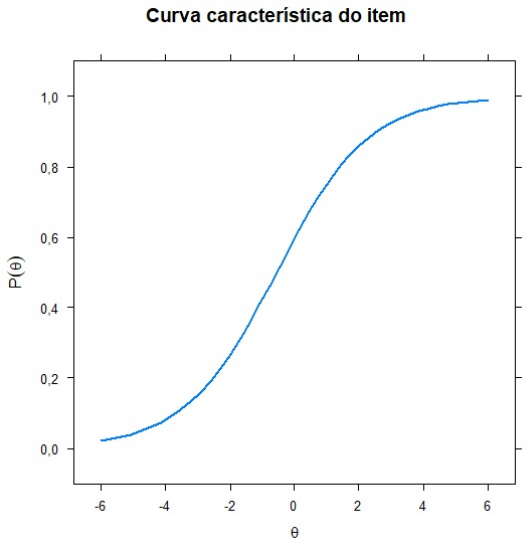
(c) $|x+2| \geq 3$

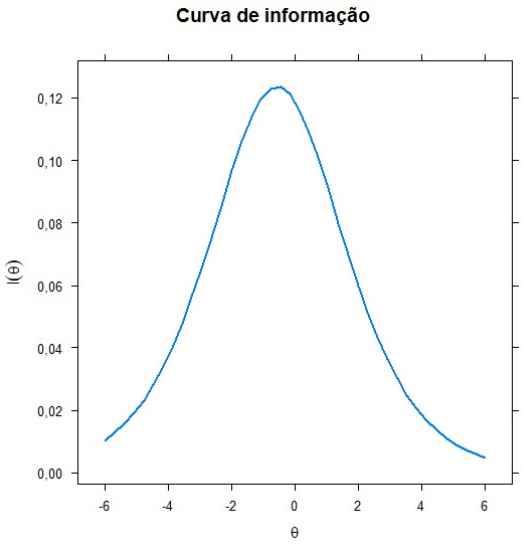
(d) $\boxed{|x-3| \geq 2}$

(e) não sei



Tópico: Valor absoluto e propriedades.





Análise do item 20

Item 20. A soma das soluções da equação $x + |2x - 3| = 2$ é:

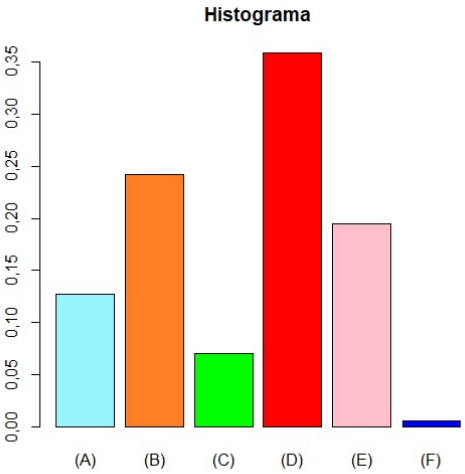
(a) $\frac{4}{3}$

(b) $\boxed{\frac{8}{3}}$

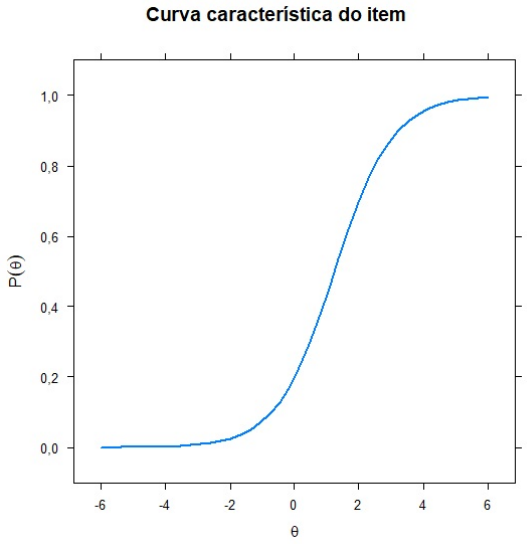
(c) $\frac{7}{3}$

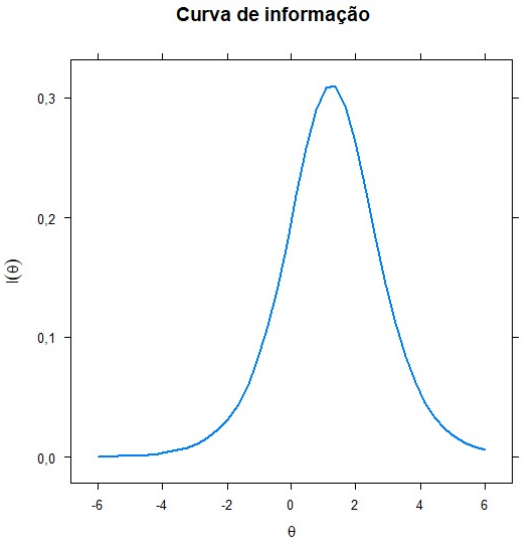
(d) $\frac{5}{3}$

(e) não sei



Tópico: Equações e inequações modulares.





Análise do item 21

Item 21. O conjunto solução da inequação $\dfrac{2x+1}{x+1} > 2$ é:

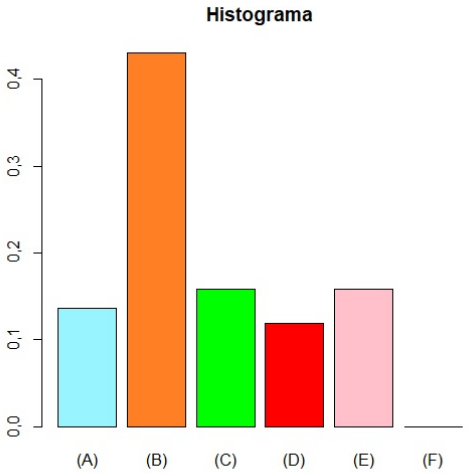
(a) $(-\infty, 1)$

(b) $(1, \infty)$

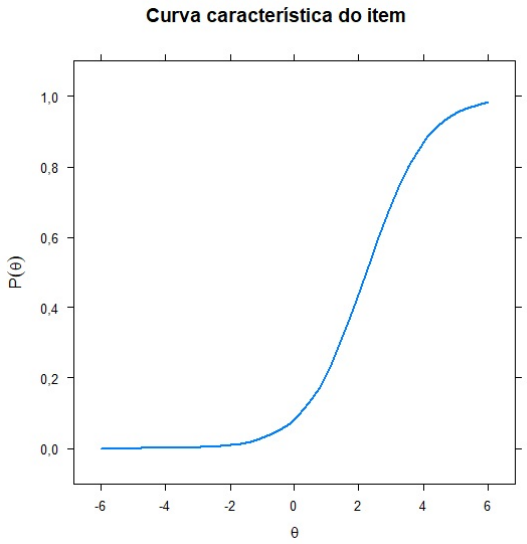
(c) $(-1, \infty)$

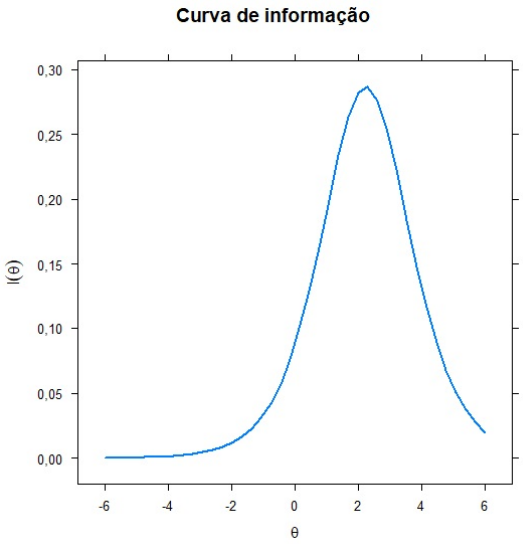
(d) $\boxed{(-\infty, -1)}$

(e) não sei



Tópico: Equações e inequações racionais.





Análise do item 22

Item 22. Determine a equação da reta que passa pelos pontos $P(-1,1)$ e $Q(1,5)$.

(a) $y = x + 2$

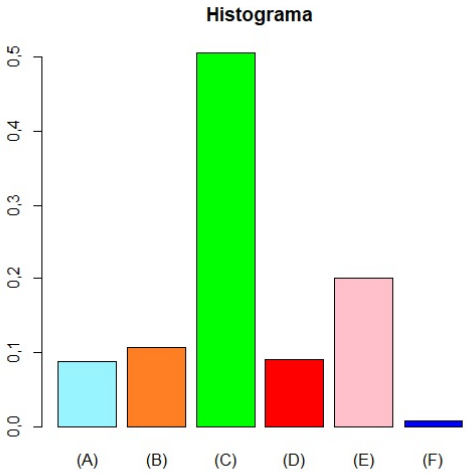
(b) $\boxed{y = 2x + 1}$

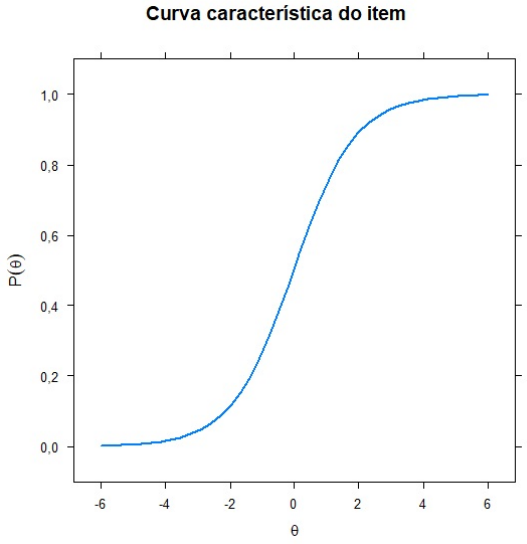
(c) $y = 2x + 3$

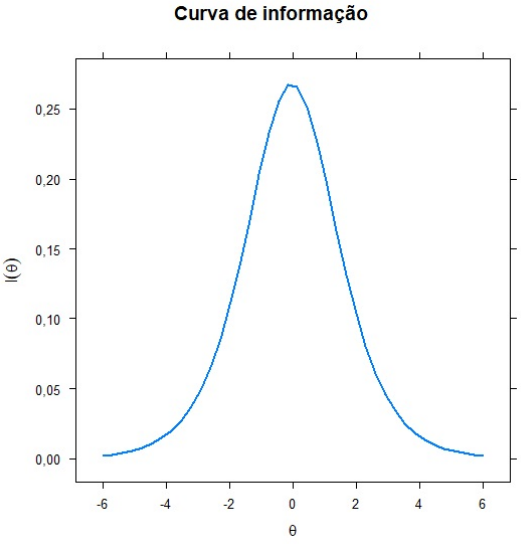
(d) $y = 3x + 2$

(e) não sei

Tópico: Retas no plano e coeficiente angular.







Análise do item 23

Item 23. Encontre o domínio de: $f(x) = \dfrac{1}{\sqrt{1+x}}$.

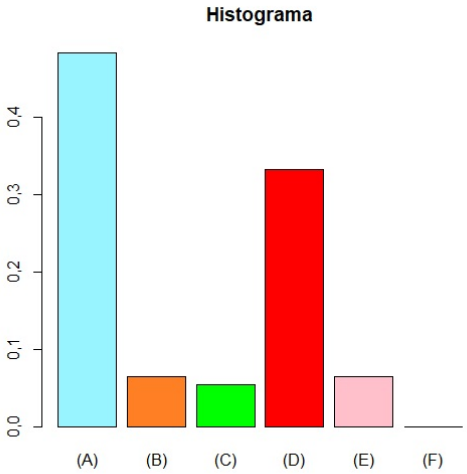
(a) $x \neq -1$

(b) $(-\infty, 1]$

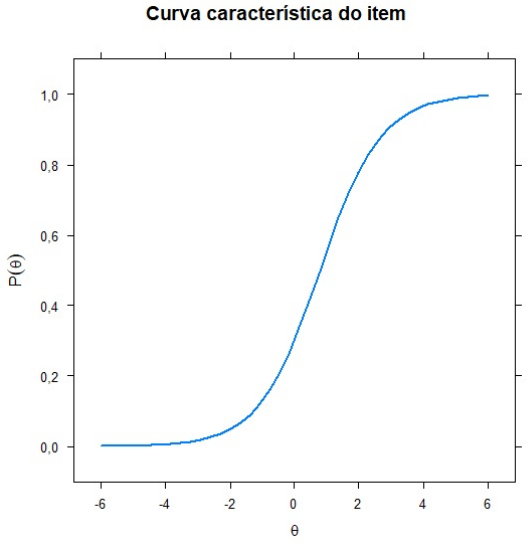
(c) $x \neq 0$

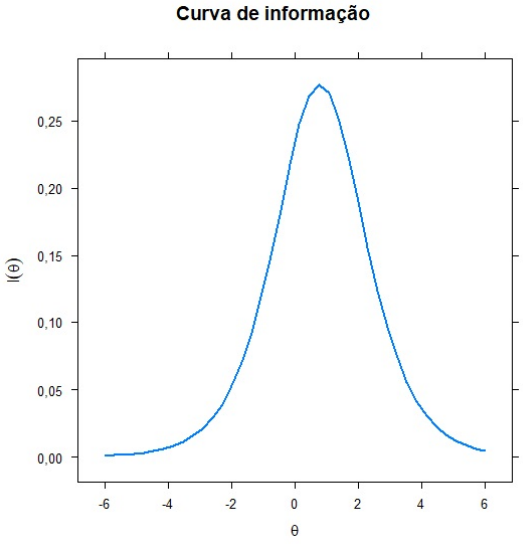
(d) $\boxed{(-1, \infty)}$

(e) não sei



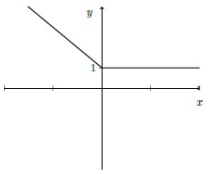
Tópico: Funções: definição. Domínio e imagem.





Análise do item 24

Item 24. Seja o gráfico de uma função real f.



Com base neste gráfico, podemos dizer que o conjunto imagem de f é:

(a) $\mathbb{R}$

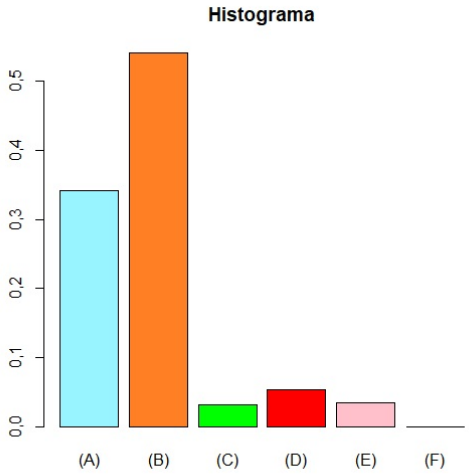
(b) $\boxed{[1, +\infty)}$

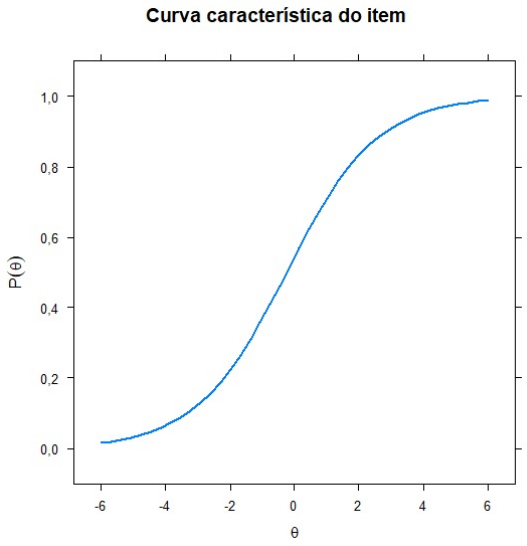
(c) $[-1, +\infty)$

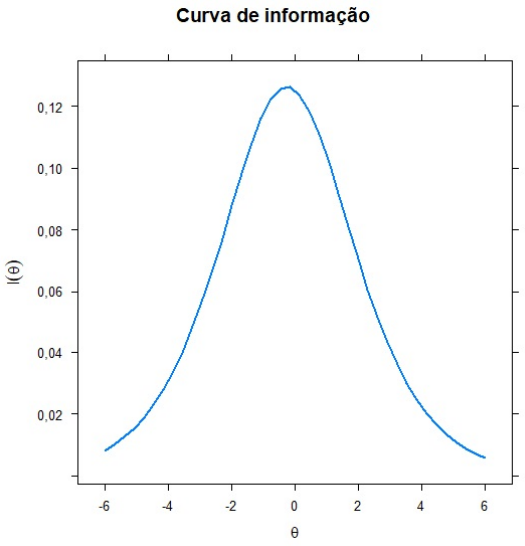
(d) $[0, +\infty)$

(e) não sei

Tópico: Funções: definição. Domínio e imagem.







Análise do item 25

Item 25. Os pontos de interseção de $f(x) = \dfrac{x+4}{x-2}$ com os eixos x e y são, respectivamente:

(a) $(-4, 0)$ e $(-2, 0)$

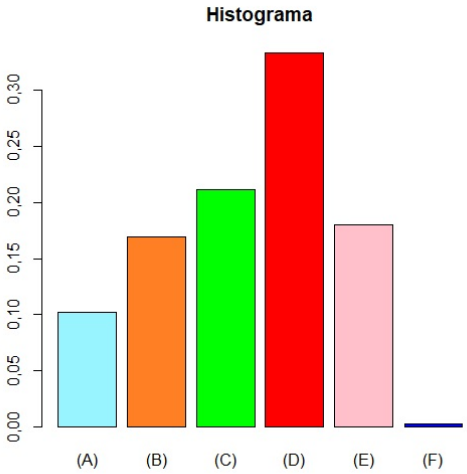
(b) $(4, 0)$ e $(0, 2)$

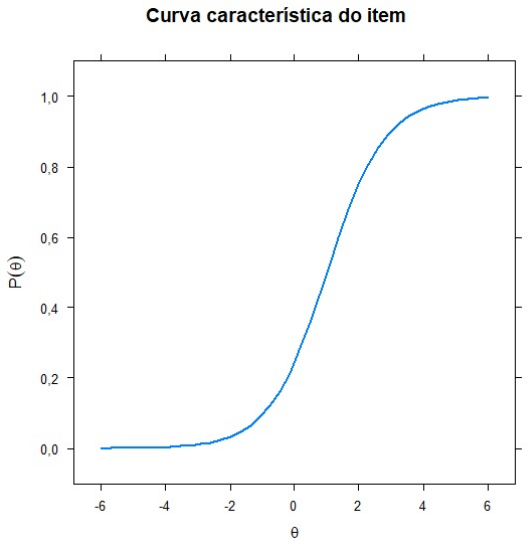
(c) $(0, -4)$ e $(2, 0)$

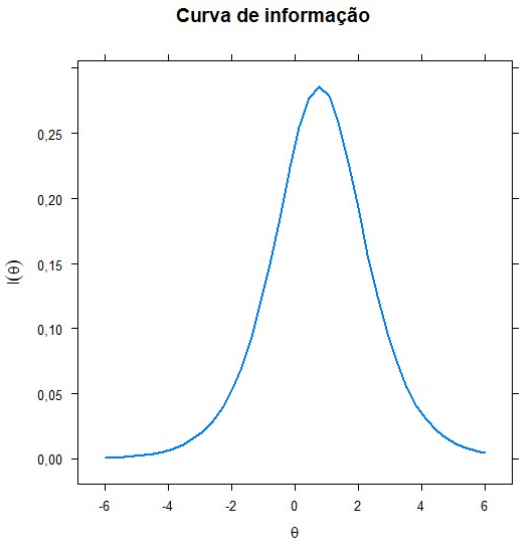
(d) $\boxed{(-4, 0) \text{ e } (0, -2)}$

(e) não sei

Tópico: Funções: gráficos. Interseção com os eixos coordenados.







Análise do item 26

Item 26. A abscissa do ponto máximo de $f(x) = x^2$ no intervalo $[-3, 2]$ é:

(a) $\boxed{x = -3}$

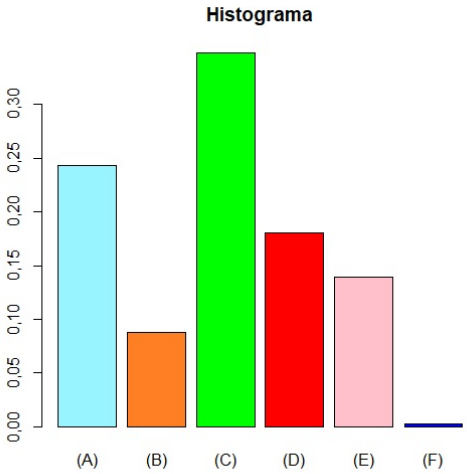
(b) $x = 0$

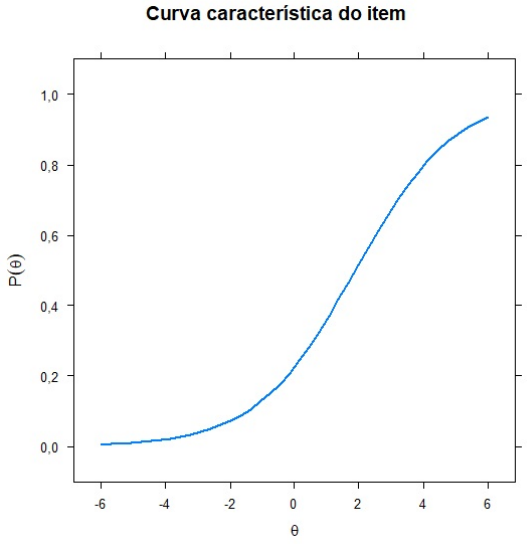
(c) $x = 9$

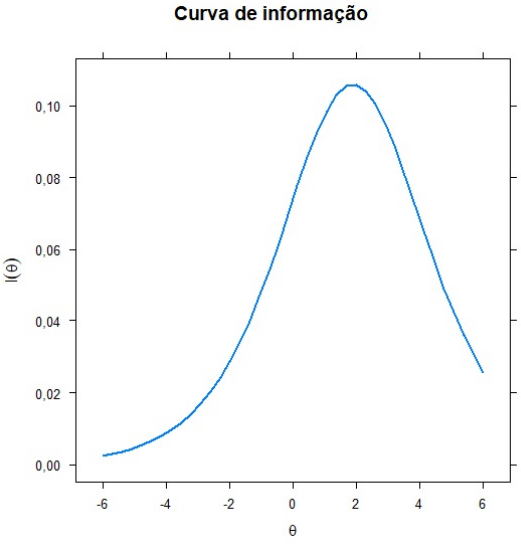
(d) $x = 2$

(e) não sei

Tópico: Máximos e mínimos locais e globais.

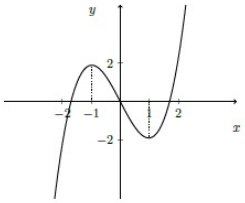






Análise do item 27

Item 27. Seja f uma função real cujo gráfico é exibido abaixo:



Com base neste gráfico, pode-se afirmar que:

(a) $\boxed{f \text{ é decrescente em } (-1, 1)}$

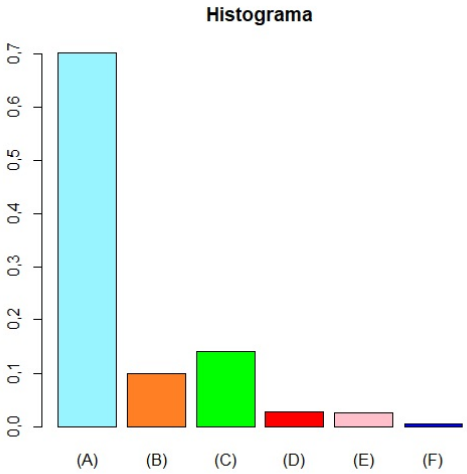
(b) f é crescente em $(-0, +\infty)$

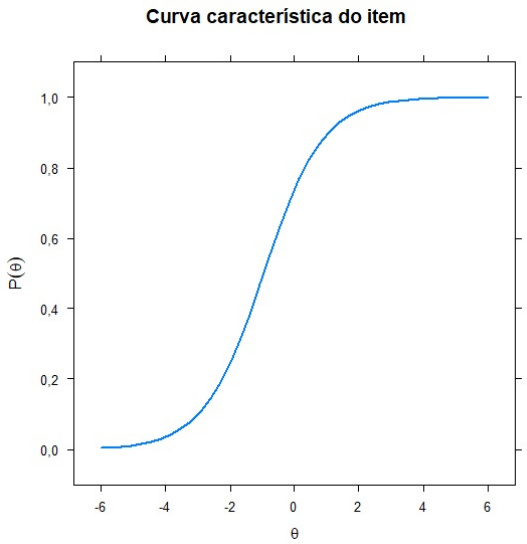
(c) f é decrescente em $(-\infty, -1]$

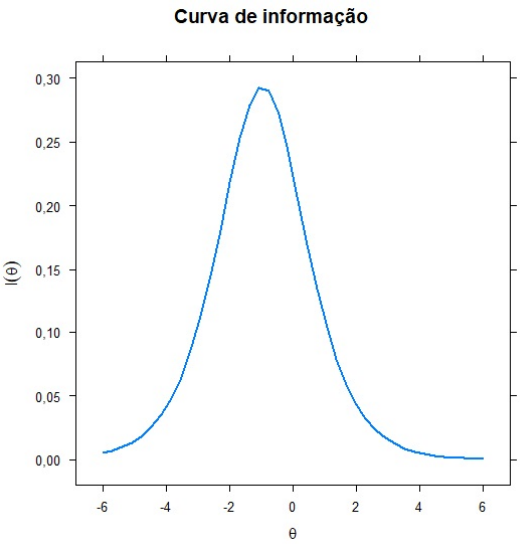
(d) f é sempre crescente

(e) não sei

Tópico: Intervalos de crescimento e decrescimento.







Análise do item 28

Item 28. Se $f(x) = x^2+1$ e $g(x) = 2x-1$, então $f(g(2))$ é:

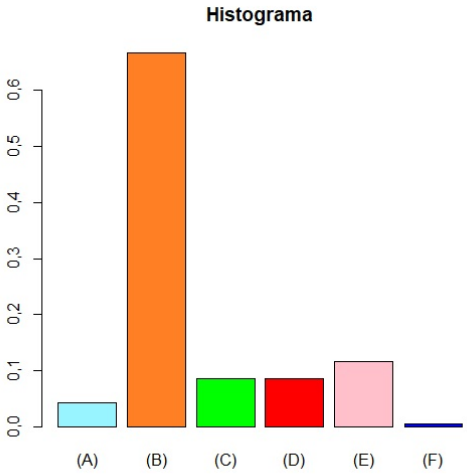
(a) 11

(b) $\boxed{10}$

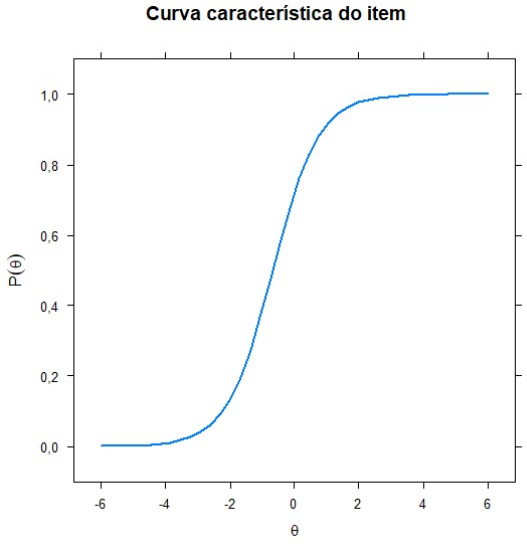
(c) 9

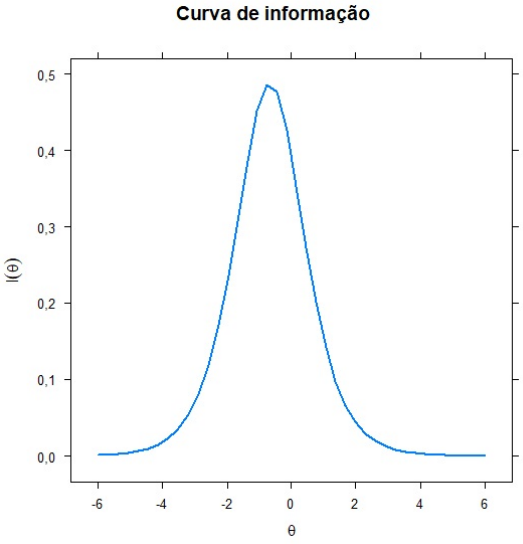
(d) 5

(e) não sei



Tópico: Composição de funções.





Análise do item 29

Item 29. Sejam as funções f e g funções tais que $g(x) = f(x+2) + 3$. Então o gráfico de g pode ser obtido do gráfico de f por:

(a) translação horizontal de 2 unidades para esquerda e translação vertical de 3 unidades para cima.

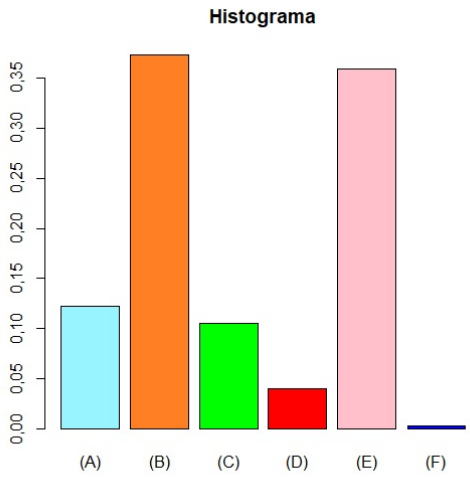
(b) translação horizontal de 2 unidades para direita e translação vertical de 3 unidades para cima.

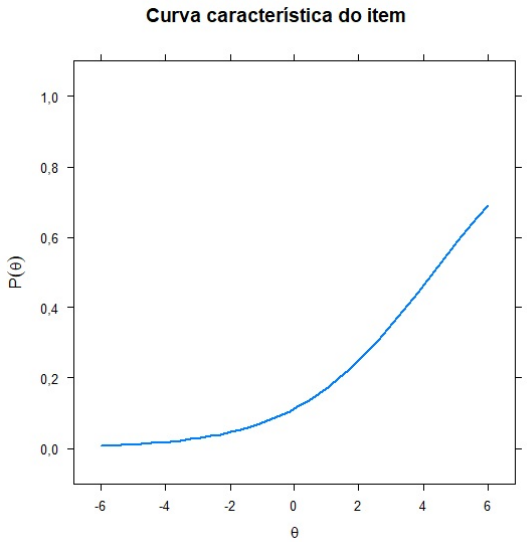
(c) translação horizontal de 2 unidades para esquerda e translação vertical de 3 unidades para baixo.

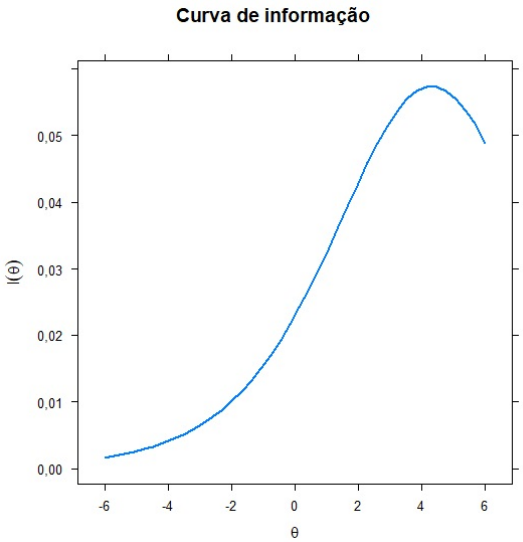
(d) translação horizontal de 2 unidades para direita e translação vertical de 3 unidades para baixo.

(e) não sei

Tópico: Transformação de funções: translação, rotação, reflexão, contração e expansão.

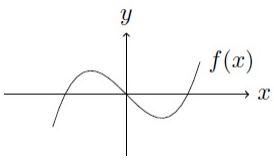


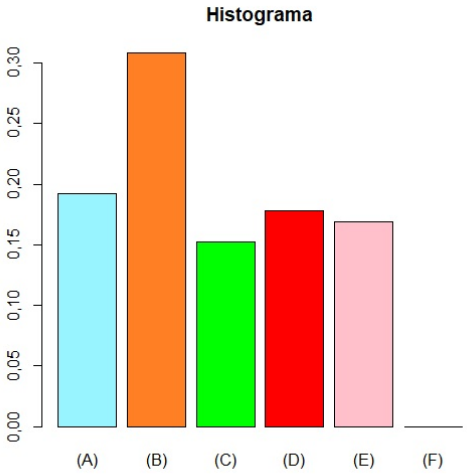




Análise do item 30

Item 30. O gráfico abaixo pode representar a função polinomial f definida por





(a) $f(x) = x^2 - x$

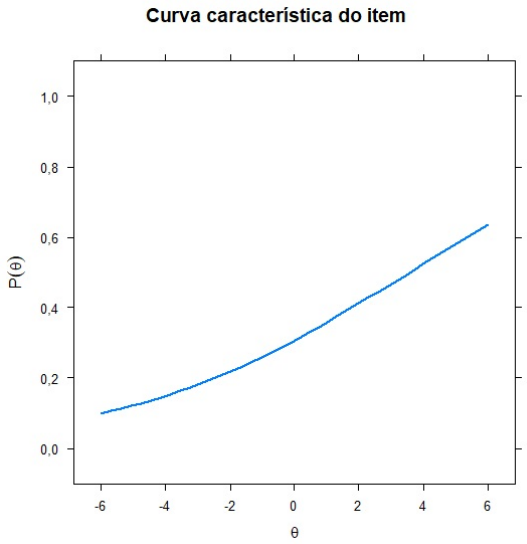
(b) $\boxed{f(x) = x^3 - x}$

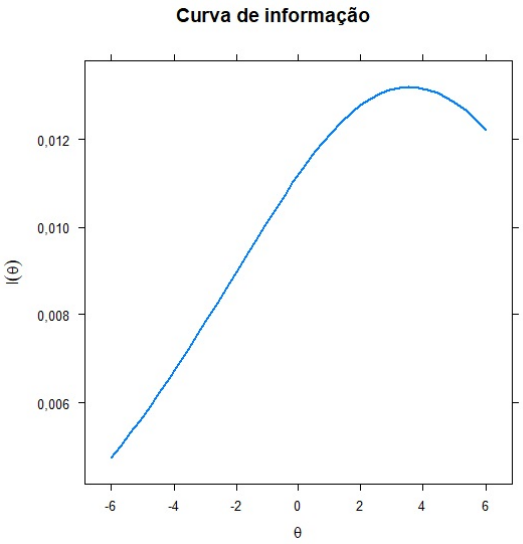
(c) $f(x) = x^4 - x^3$

(d) $f(x) = x^4 - x$

(e) não sei

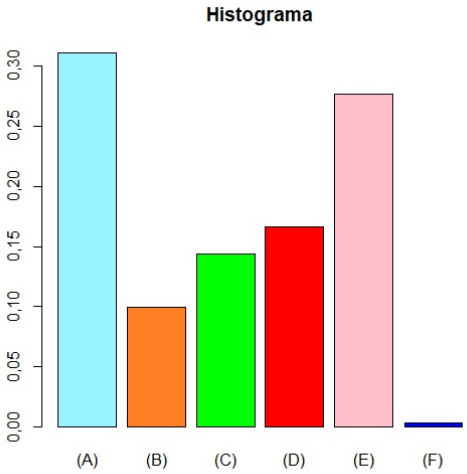
Tópico:Polinômios e funções polinomiais: definição e propriedades.





Análise do item 31

Item 31. O resto da divisão de $3x^3 + 3x^2 - 20x - 17$ por $4 - x^2$ é:



(a) $\boxed{-8x - 5}$

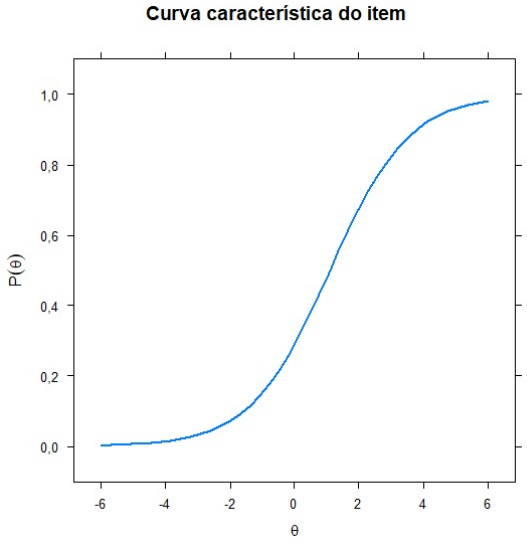
(b) $-9x - 4$

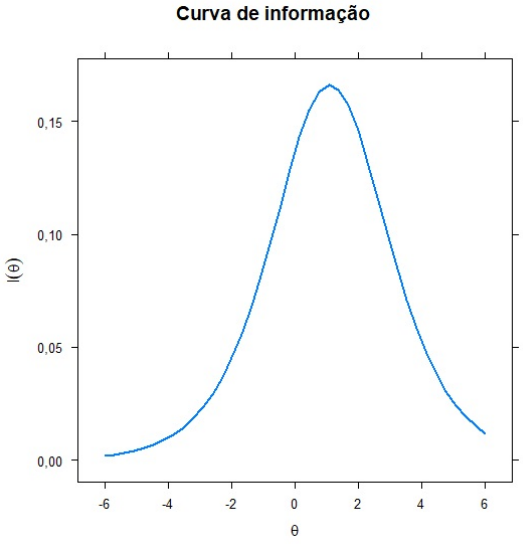
(c) $-7x - 2$

(d) $-6x - 8$

(e) não sei

Tópico: Divisão de polinômios.





Análise do item 32

Item 32. Determine x que satisfaça $2(2x-3)+5(x+1)=6x-7$.

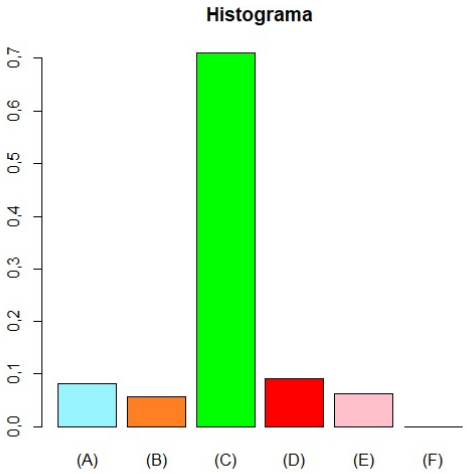
(a) $x=2$

(b) $x=4$

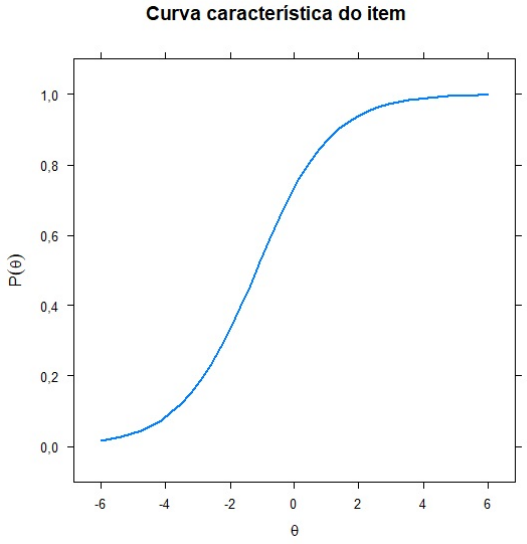
(c) $\boxed{x=-2}$

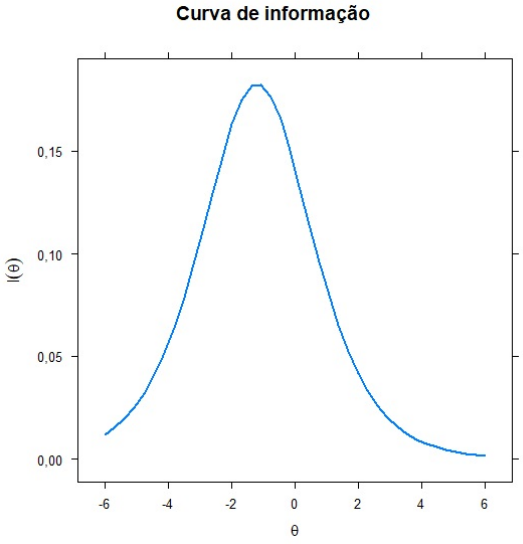
(d) $x=-4$

(e) não sei



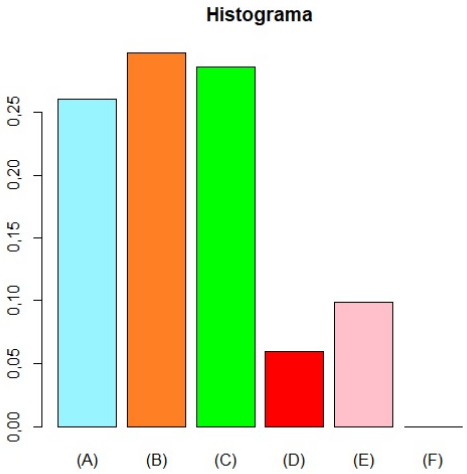
Tópico: Equações polinomiais.





Análise do item 33

Item 33. A expressão $(x+1)(x+2) > 0$ é equivalente à:



(a) $x > -1$

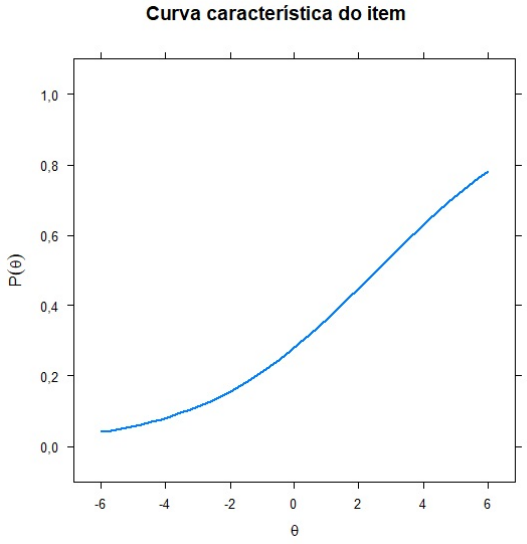
(b) $-2 < x < -1$

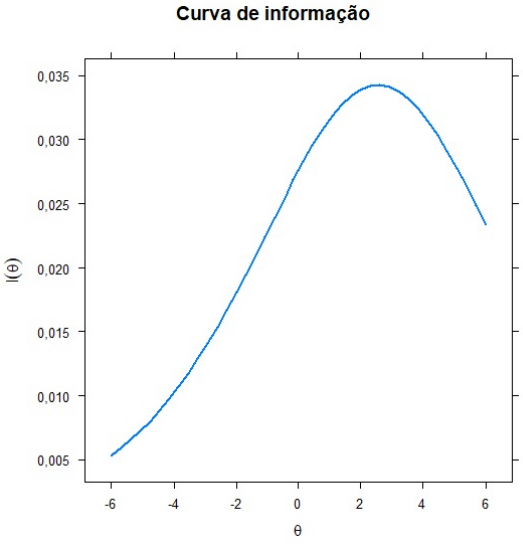
(c) $\boxed{x < -2 \text{ ou } x > -1}$

(d) $x < -2$

(e) não sei

Tópico: Inequações polinomiais.





Análise do item 34

Item 34. Determine A e B tais que $\dfrac{A}{x-1} + \dfrac{B}{x+2} = \dfrac{1}{(x-1)(x+2)}$.

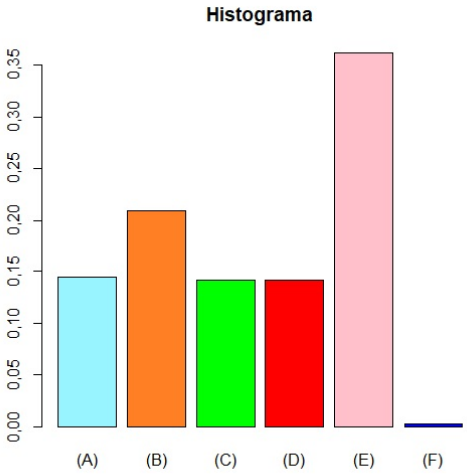
(a) $A = -\frac{1}{3}, B = \frac{1}{3}$

(b) $\boxed{A = \frac{1}{3}, B = -\frac{1}{3}}$

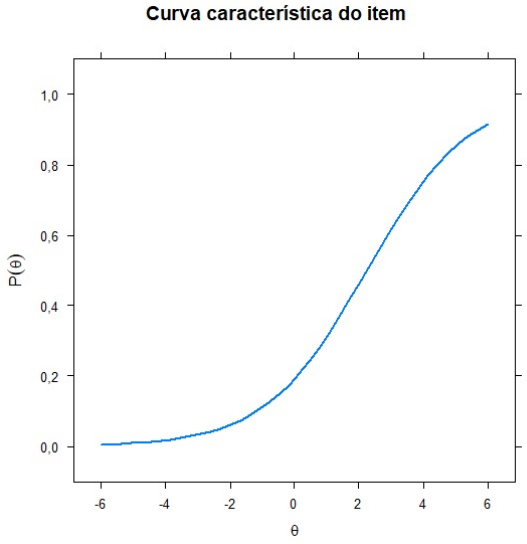
(c) $A = -\frac{1}{2}, B = -\frac{1}{3}$

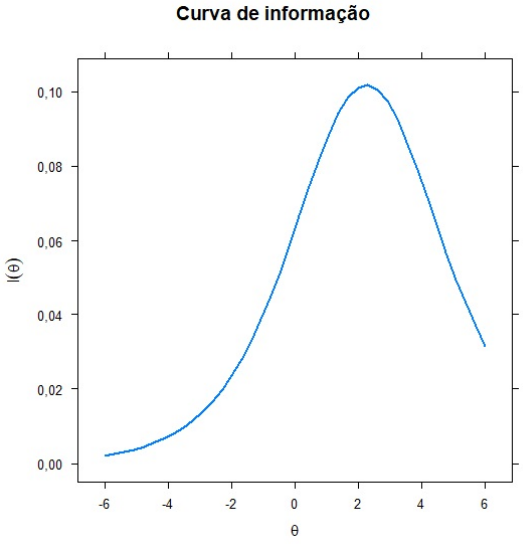
(d) $A = \frac{1}{4}, B = -\frac{1}{3}$

(e) não sei



Tópico: MMC e MDC de polinômios. Decomposição em frações parciais.

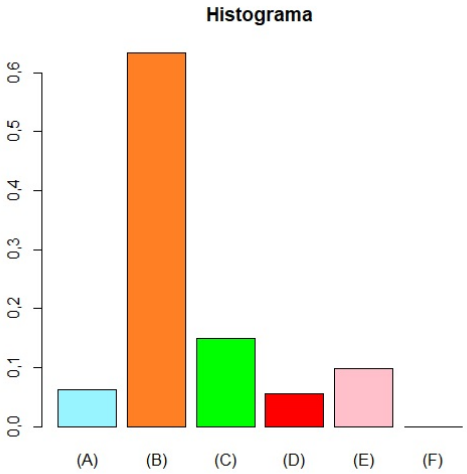




Análise do item 35

Item 35. Seja a função real f definida por:

$$f(x) = \begin{cases} 1 - x^2 \text{ se } x < 2 \\ -x \text{ se } x \geq 2 \end{cases}$$



O valor de $f(-1) + f(0) + f(3)$ é:

(a) 1

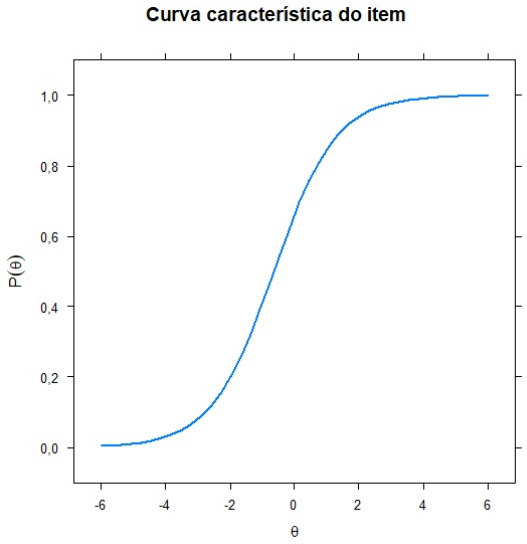
(b) $\boxed{-2}$

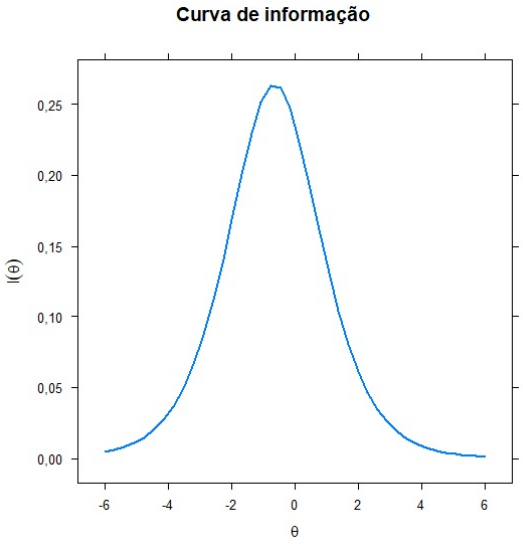
(c) 0

(d) -1

(e) não sei

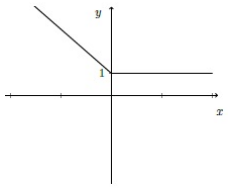
Tópico: Funções definidas por várias sentenças.

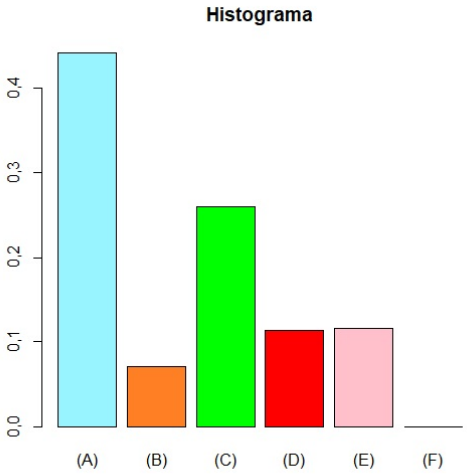




Análise do item 36

Item 36. Selecione a função que melhor se aproxima do gráfico:





(a) $f(x) = \begin{cases} -x + 1 \text{ se } x < 0 \\ 1 \text{ se } x \geq 0 \end{cases}$

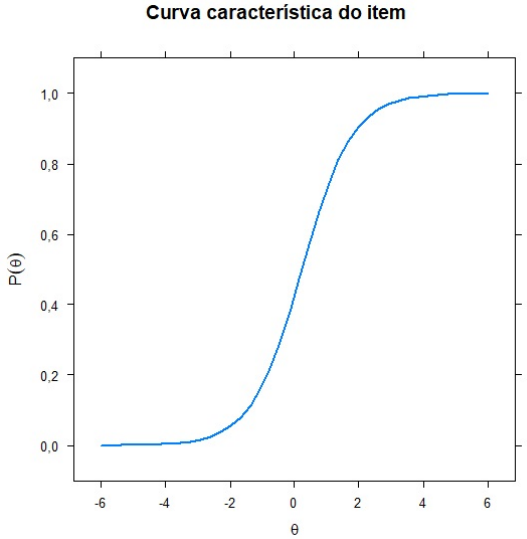
(b) $f(x) = \begin{cases} 1 \text{ se } x < 0 \\ -x + 1 \text{ se } x \geq 0 \end{cases}$

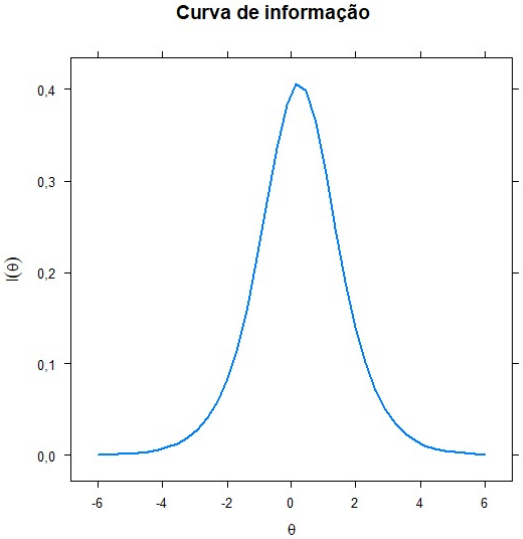
(c) $f(x) = \begin{cases} x + 1 \text{ se } x < 0 \\ 1 \text{ se } x \geq 0 \end{cases}$

(d) $f(x) = \begin{cases} x \text{ se } x < 0 \\ x + 1 \text{ se } x \geq 0 \end{cases}$

(e) não sei

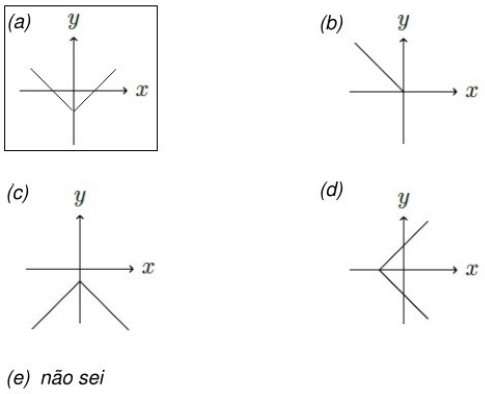
Tópico: Funções definidas por várias sentenças.



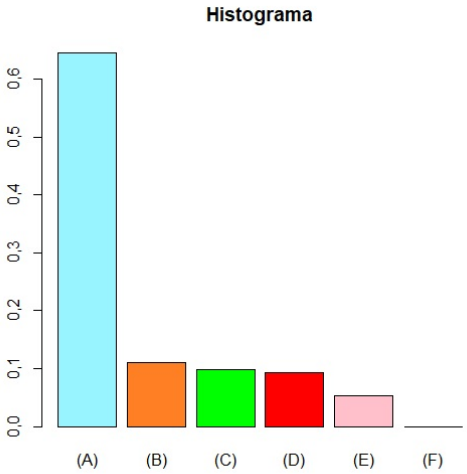


Análise do item 37

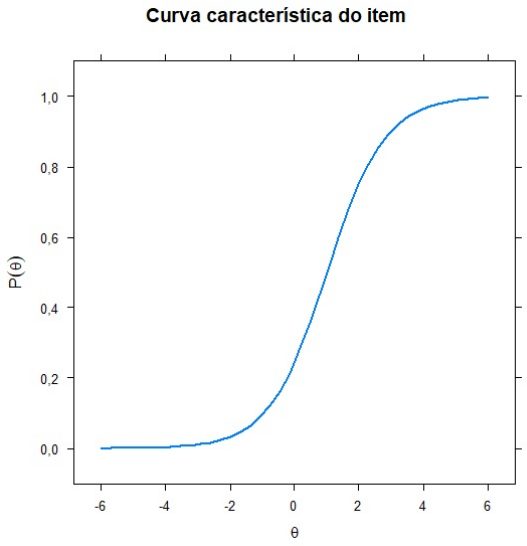
Item 37. O gráfico que melhor representa a função real f definida por $f(x) = |x| - 1$.

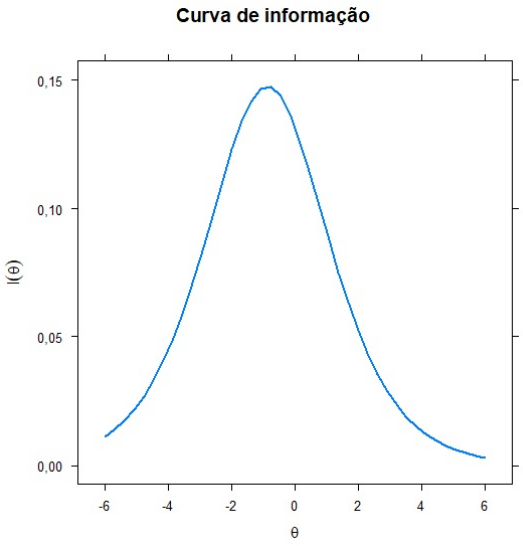


(e) *não sei*



Tópico: Função modular.





Análise do item 38

Item 38. Se $f(x) = \frac{1}{x}$, calcule: $\frac{f(x) - f(2)}{x - 2}$.

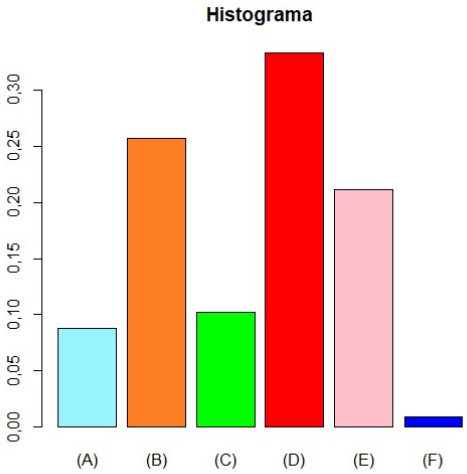
(a) $-\frac{1}{x}$

(b) $\frac{1}{2x}$

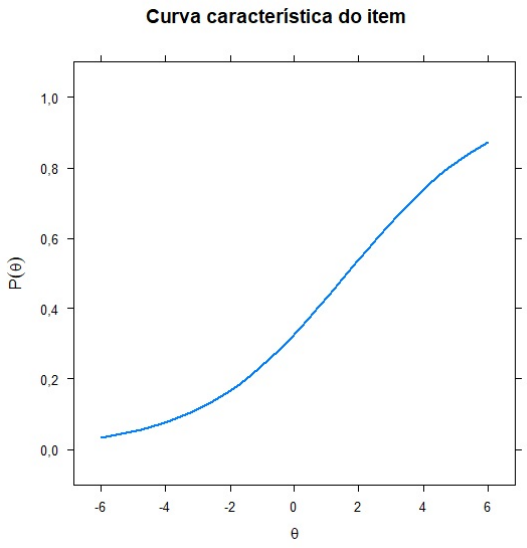
(c) $\frac{1}{x}$

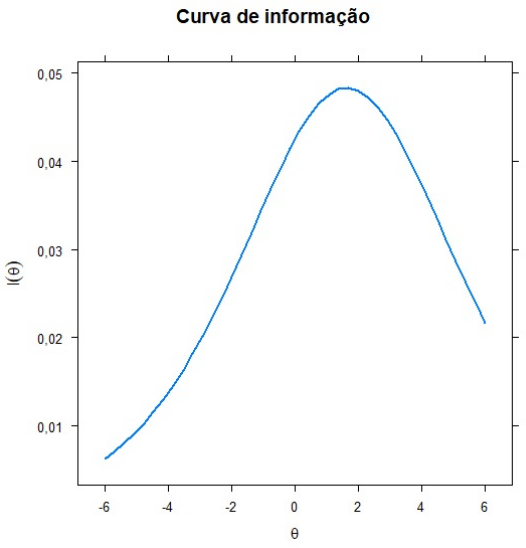
(d) $\boxed{-\frac{1}{2x}}$

(e) não sei



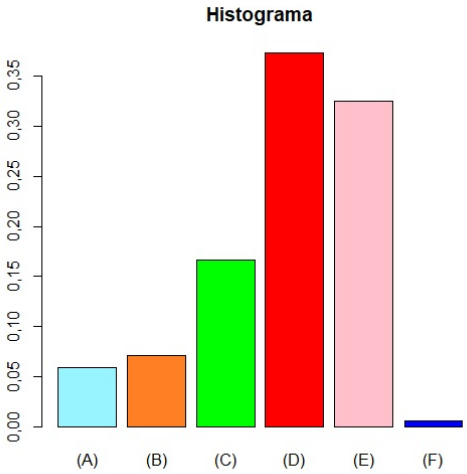
Tópico: Taxa de variação média.





Análise do item 39

Item 39. Selecione o intervalo em que a função real f tal que $f(x) = (x+1)^2 + 1$ é injetora.



(a) $(-\infty, 1)$

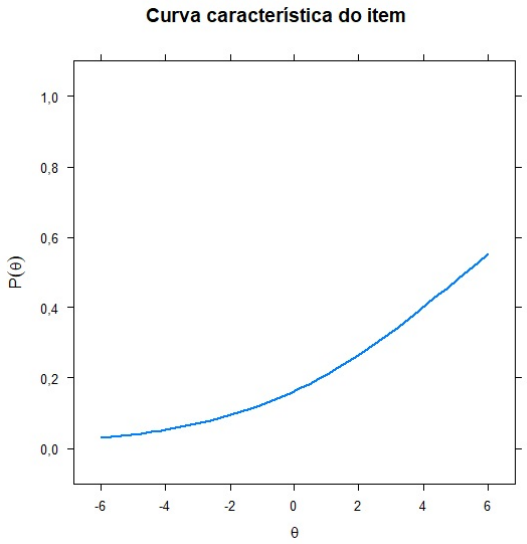
(b) $\mathbb{R}_-$

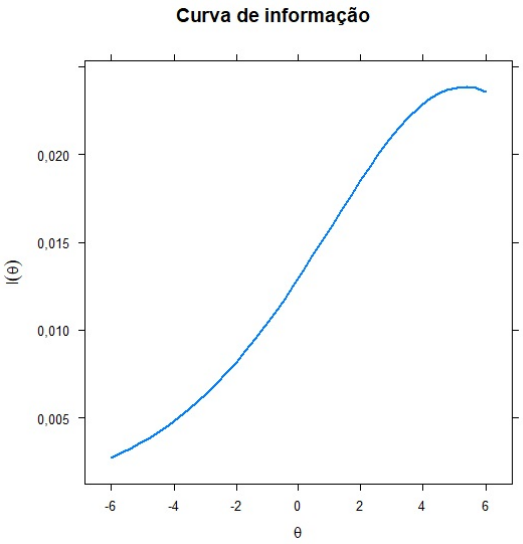
(c) $\boxed{[-1, \infty)}$

(d) $\mathbb{R}$

(e) não sei

Tópico: Função sobrejetora, injetora e bijetora.





Análise do item 40

Item 40. Se $f(x) = \dfrac{x+3}{x}$, então:

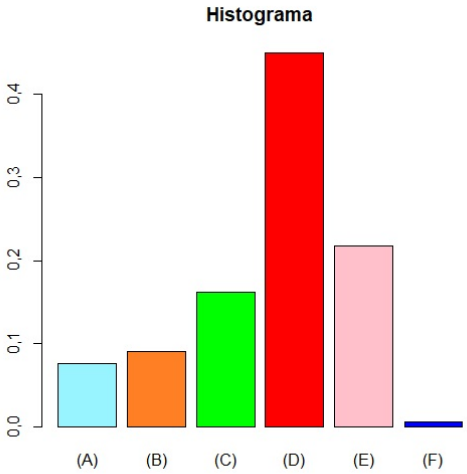
(a) $f^{-1}(x) = \dfrac{3}{3x-1}$

(b) $f^{-1}(x) = \dfrac{x-1}{3}$

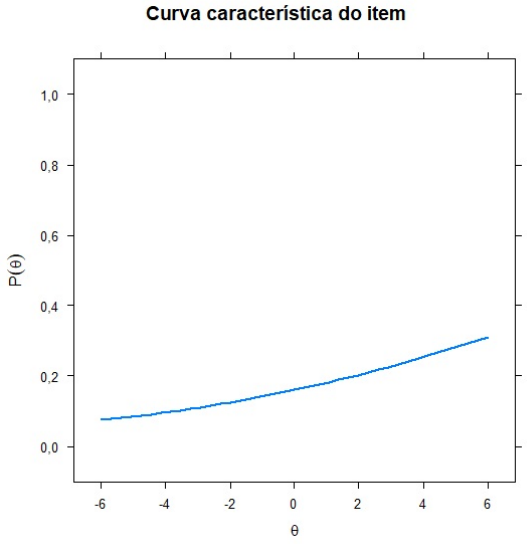
(c) $\boxed{f^{-1}(x) = \dfrac{3}{x-1}}$

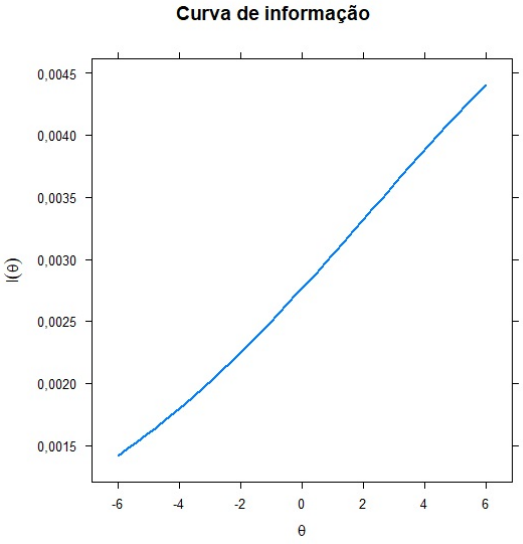
(d) $f^{-1}(x) = \dfrac{x}{x+3}$

(e) não sei



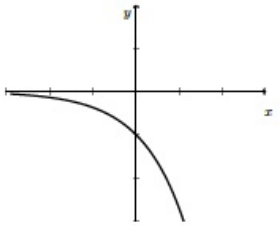
Tópico: Funções Inversa: Propriedades.

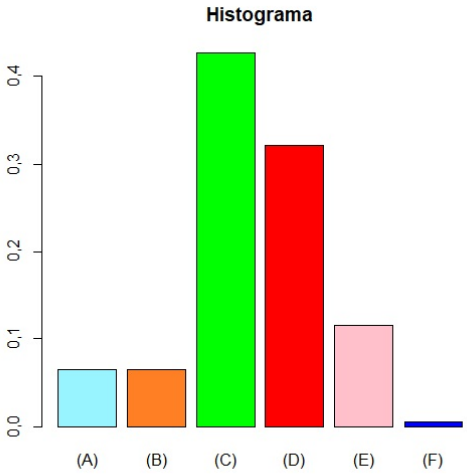




Análise do item 41

Item 41. Dentre as opções abaixo, determine a função exponencial f que melhor se aproxima do gráfico:





(a) $f(x) = \left(\frac{1}{2}\right)^x$

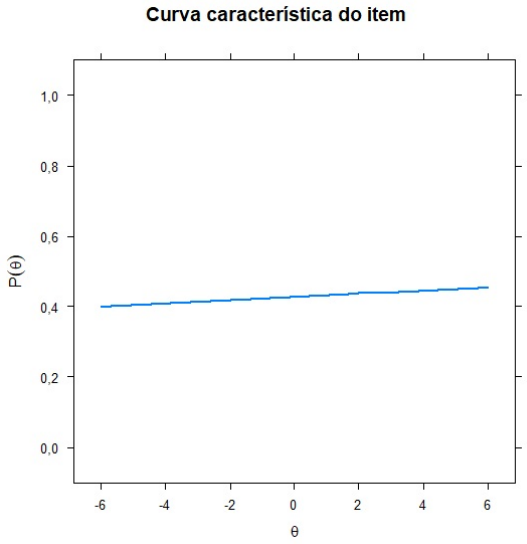
(b) $f(x) = 2^x$

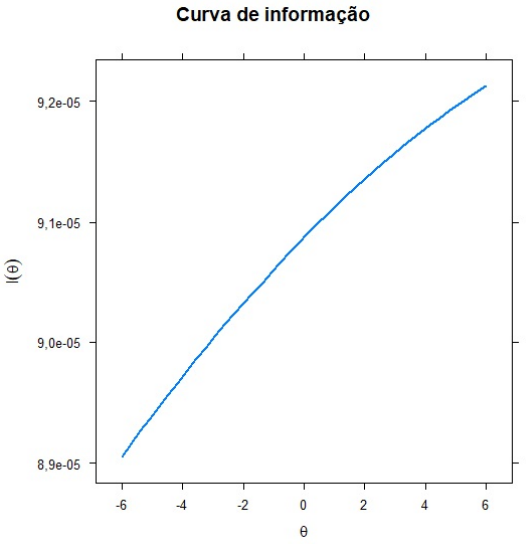
(c) $\boxed{f(x) = -2^x}$

(d) $f(x) = -\left(\frac{1}{2}\right)^x$

(e) não sei

Tópico: Função exponencial: definição e propriedades.





Análise do item 42

Item 42. Determine o domínio da relação $y = \log_x(3 - x)$.

(a) $x > 0, x \neq 1$

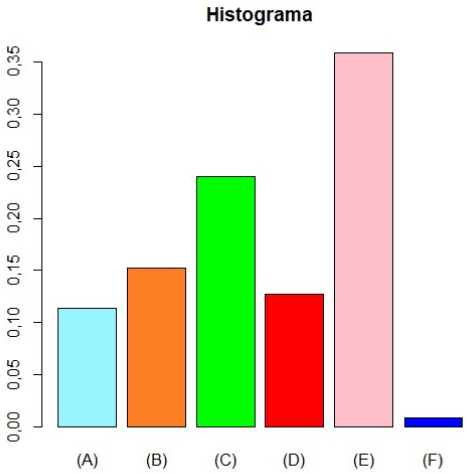
(b) $x > 3$

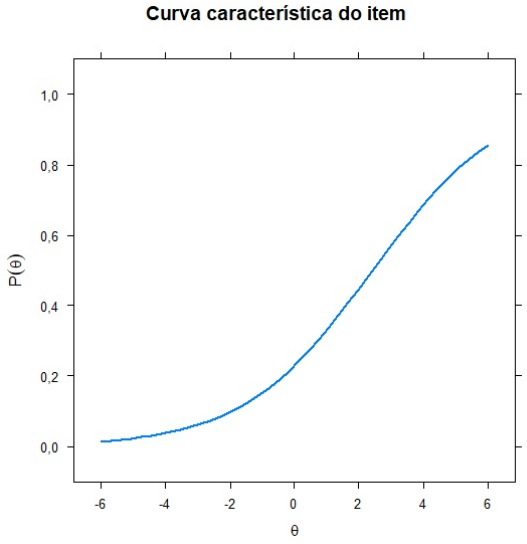
(c) $\boxed{0 < x < 3, x \neq 1}$

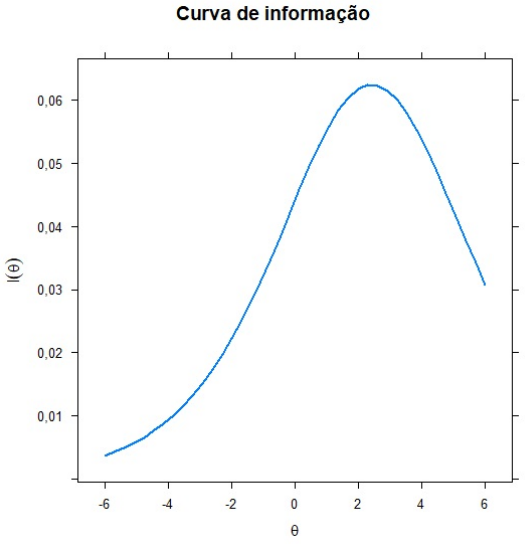
(d) $0 < x < 3$

(e) não sei

Tópico: Logarítmos: definição e propriedades. Mudança de base.







Análise do item 43

Item 43. Calcule: $\log_3(3^5)$

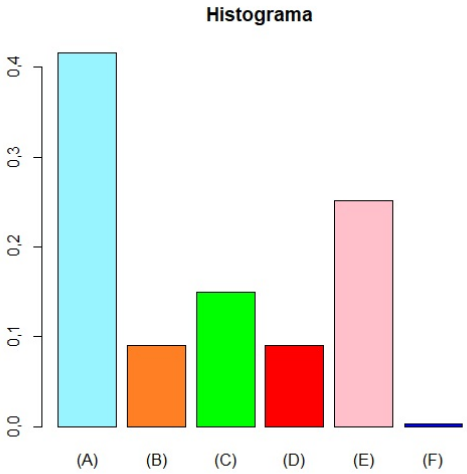
(a) $\boxed{5}$

(b) 3

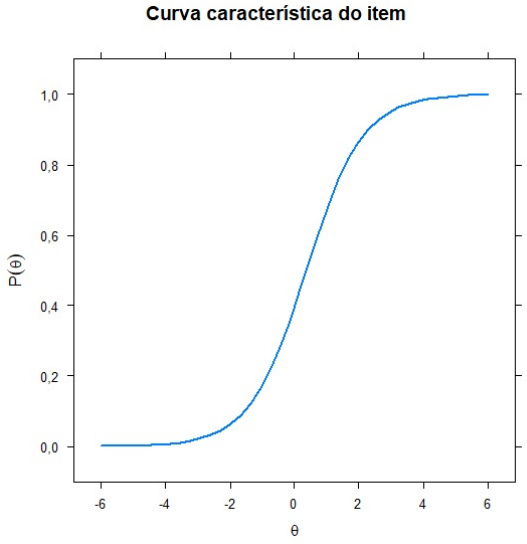
(c) $\frac{1}{5}$

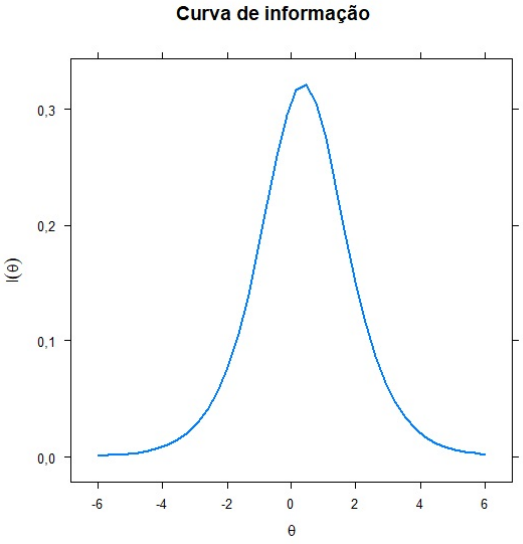
(d) $\frac{1}{3}$

(e) não sei



Tópico: Logaritmos: definição e propriedades. Mudança de base.





Análise do item 44

Item 44. Determine o conjunto solução da equação $5^{x^2} = 625$.

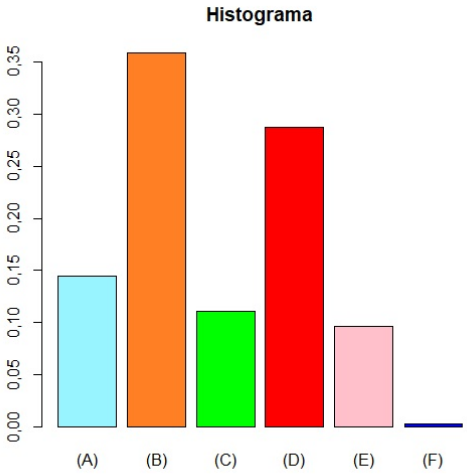
(a) $\{-4, 4\}$

(b) $\boxed{\{-2, 2\}}$

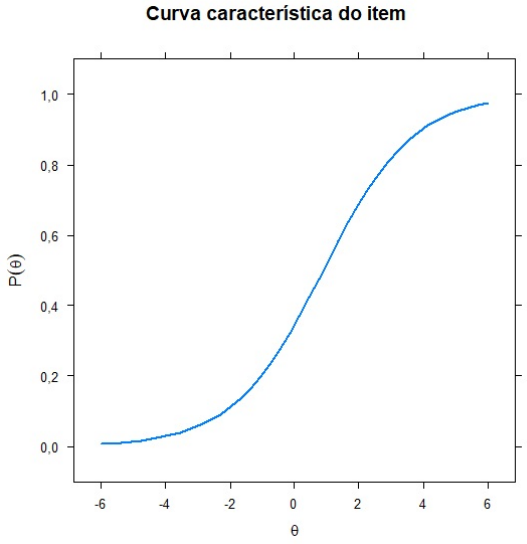
(c) $\{4\}$

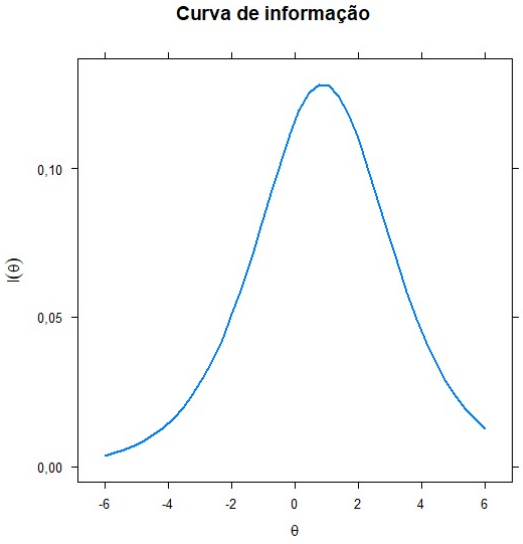
(d) $\{2\}$

(e) não sei



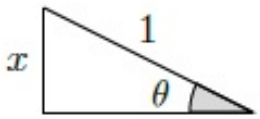
Tópico: Inequações exponenciais e logarítmicas.





Análise do item 45

Item 45. Considere o triângulo retângulo:



Então o valor de $tg\ \theta$ é:

(a) x

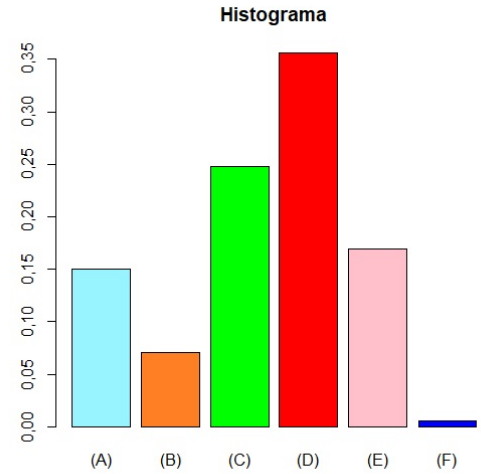
(b) $\dfrac{\sqrt{1-x^2}}{x}$

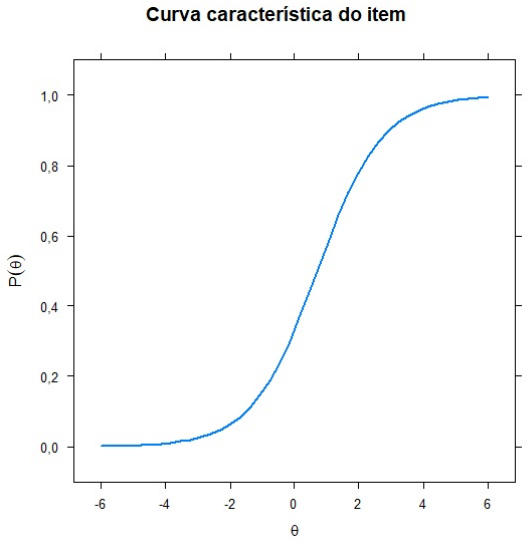
(c) $\dfrac{1}{x}$

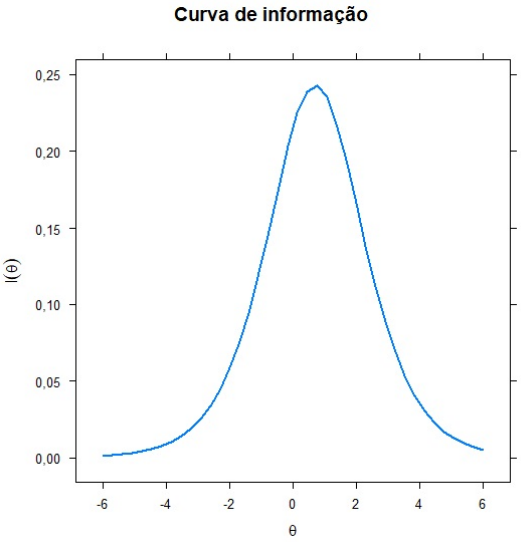
(d) $\boxed{\dfrac{x}{\sqrt{1-x^2}}}$

(e) não sei

Tópico: Relações trigonométricas no triângulo retângulo

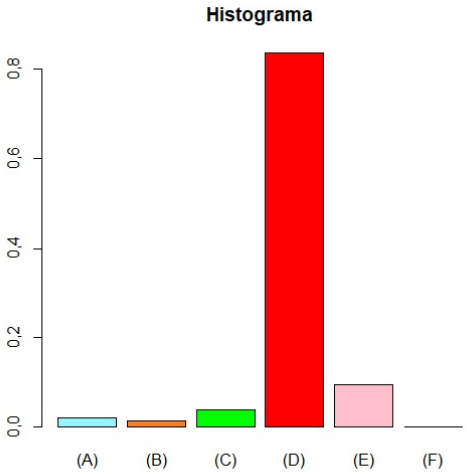






Análise do item 46

Item 46. Se $\pi \leq \theta \leq \dfrac{3\pi}{2}$ e $sen\ \theta = -\dfrac{2}{3}$, então $cos\ \theta$ é igual a:



(a) 1

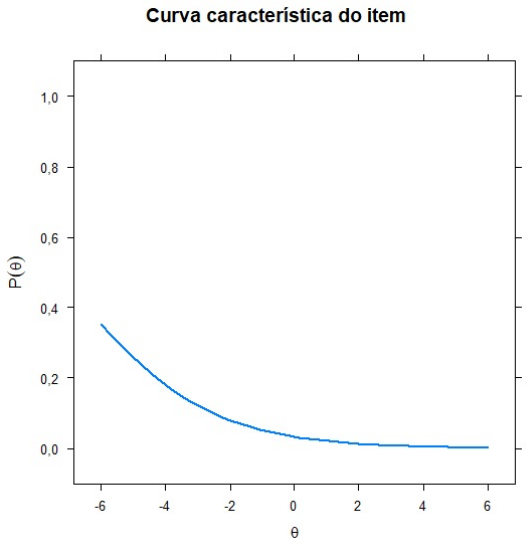
(b) $-\dfrac{1}{3}$

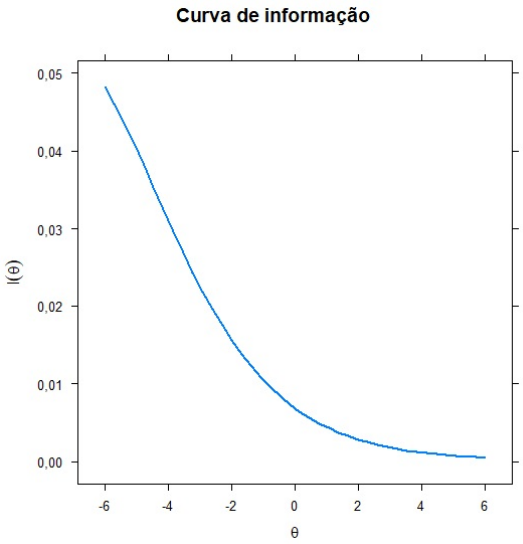
(c) $\boxed{-\dfrac{\sqrt{5}}{3}}$

(d) $-\dfrac{3}{5}$

(e) não sei

Tópico: O círculo trigonométrico.





Análise do item 47

Item 47. Simplifique a expressão:

$sen\ x(cossec\ x - sen\ x)$.

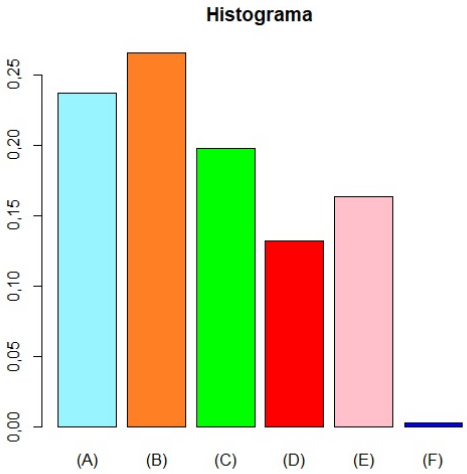
(a) $1 - cos\ x$

(b) $1 - sen\ x$

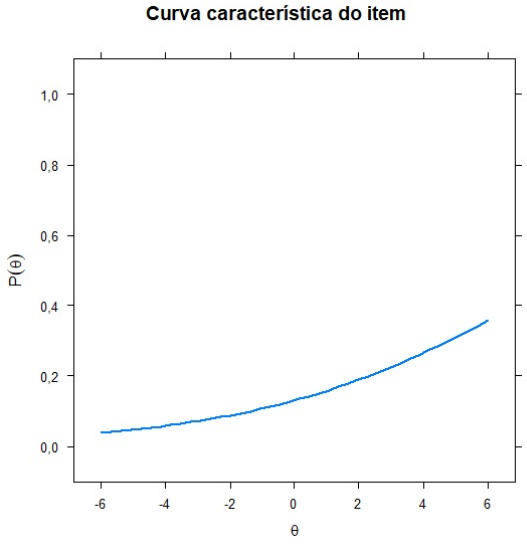
(c) $sen^2\ x$

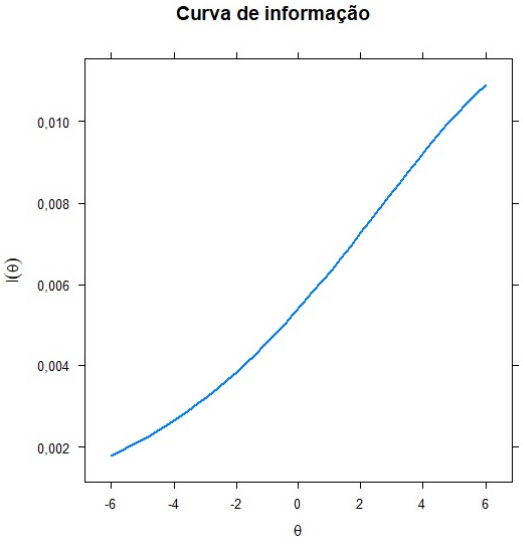
(d) $\boxed{cos^2\ x}$

(e) não sei



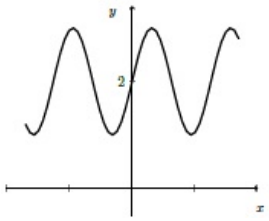
Tópico: Identidade trigonométrica

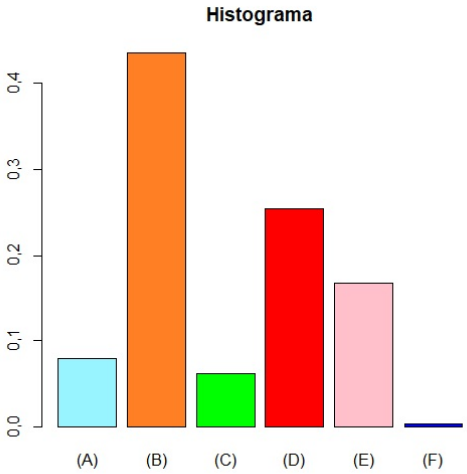




Análise do item 48

Item 48. Determine a função trigonométrica que melhor se aproxima do gráfico.





(a) $sen\ x$

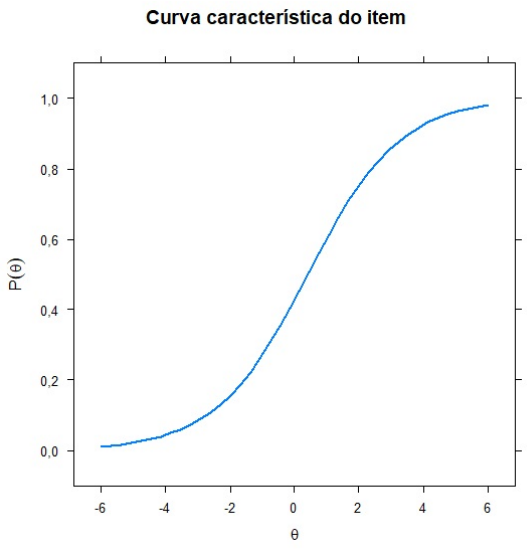
(b) $\boxed{2 + sen\ x}$

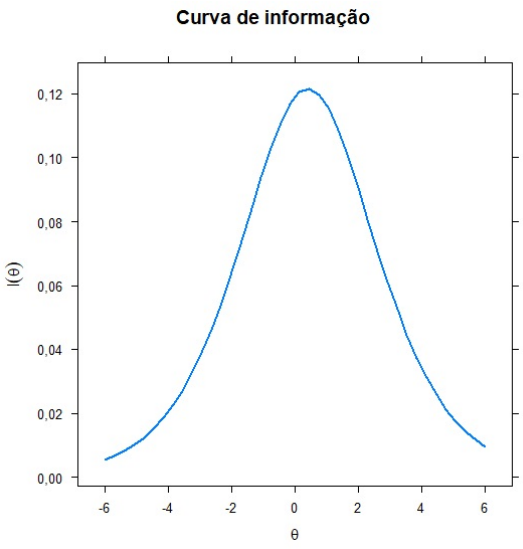
(c) $cos\ x$

(d) $2 + cos\ x$

(e) não sei

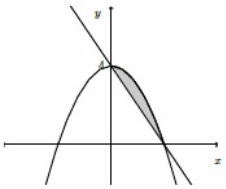
Tópico: Função trigonométrica.





Análise do item 49

Item 49. Dada as funções f e g tais que $f(x) = -x^2 + 4$ e $g(x) = -2x + 4$, determine o conjunto que melhor descreve a região hachurada.



(a) $\{(x, y) \in \mathbb{R}^2 | y \geq -x^2 + 4 \text{ e } y \leq -2x + 4\}$

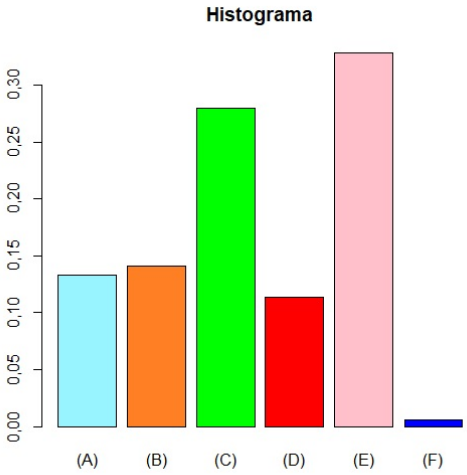
(b) $\{(x, y) \in \mathbb{R}^2 | y \geq -x^2 + 4 \text{ e } y \geq -2x + 4\}$

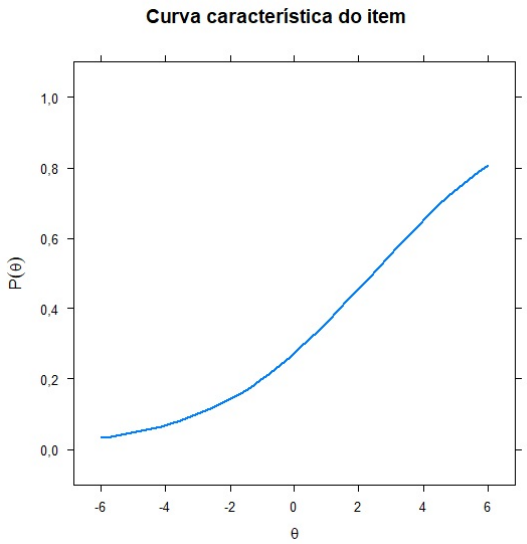
(c) $\{(x, y) \in \mathbb{R}^2 | y \leq -x^2 + 4 \text{ e } y \geq -2x + 4\}$

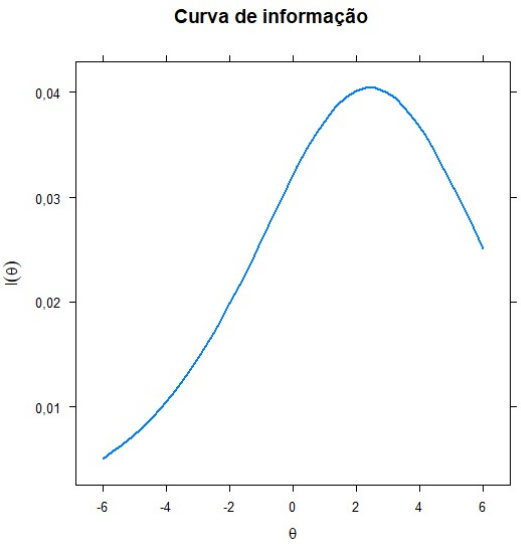
(d) $\{(x, y) \in \mathbb{R}^2 | y \leq -x^2 + 4 \text{ e } y \leq -2x + 4\}$

(e) não sei

Tópico: Área entre curvas.

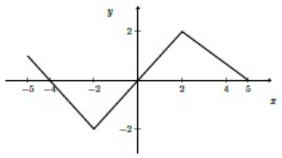


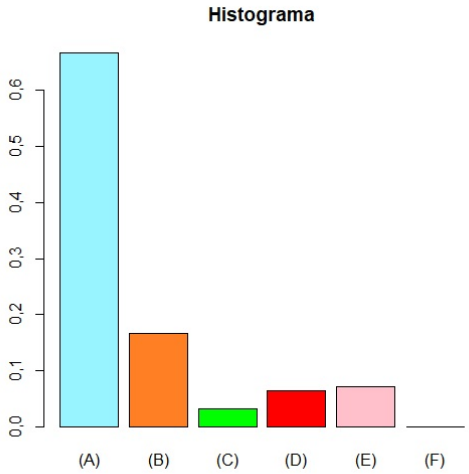




Análise do item 50

Item 50. Seja o gráfico da função real f:





O intervalo em que $f(x) < 0$ é:

(a) $\boxed{(-4, 0)}$

(b) $(-4, -2)$

(c) $(-5, -2) \bigcup (4, 5)$

(d) $(-5, -2) \bigcup (2, 5)$

(e) não sei

Tópico: Intervalos em que a função é positiva e negativa.