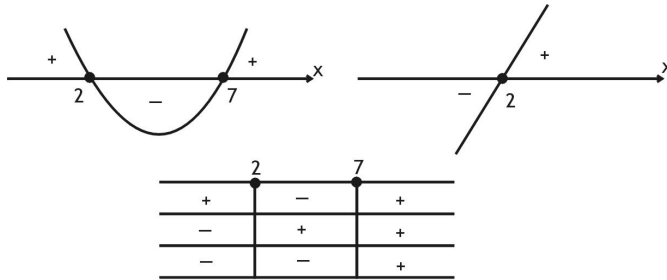


GABARITO COMENTADO

MATEMÁTICA

01 Letra C.



Como $\frac{x^2 - 9x + 14}{x - 2} \geq 0$; então: $D(f) = [7; +\infty[$.

02 Letra E.

$$f(x) = f(x+1)$$

$$x^2 - 2x = (x+1)^2 - 2$$

$$x^2 - 2x = x^2 + 2x + 1 - 2$$

$$x^2 - 2x = x^2 + 2x - 1 \Rightarrow 2x + 1 = 0$$

$$x = -\frac{1}{2}$$

03 Letra A.

$$f(x) = ax + b$$

$$(-3, 4) \Rightarrow -3a + b = 4$$

$$(3, 0) \Rightarrow \frac{3a + b = 0}{2b = 4}$$

$$b = 2$$

$$3a + 2 = 0 \Rightarrow a = -\frac{2}{3}$$

$$f(x) = -\frac{2}{3}x + 2$$

Cálculo de $f^{-1}(x)$:

$$x = -\frac{2}{3}y + 2$$

$$x - 2 = -\frac{2}{3}y$$

$$3x - 6 = -2y \Rightarrow y = -\frac{3x - 6}{2}$$

$$\text{Daí: } f^{-1}(2) = -\frac{3 \cdot 2 - 6}{2} = 0$$

04 Letra D.

$$Y = -2x^2 + bx + c$$

$$(1, 0) \Rightarrow -2 + b + c = 0 \Rightarrow b + c = 2$$

$$X_v = \frac{-b}{2a} = 3 \Rightarrow \frac{-b}{-4} = 3 \Rightarrow b = 12 \text{ e } c = -10$$

$$Y_v = \frac{-\Delta}{4a} = v \Rightarrow \frac{-64}{-8} = v \Rightarrow v = 8$$

05 Letra C.

$$f_0 f(x) = f(3x + 5) = 3(3x + 5) + 5 = 9x + 15 + 5 = 9x + 20$$

06 Letra E.

$$f(x) = \frac{3x - 1}{2}$$

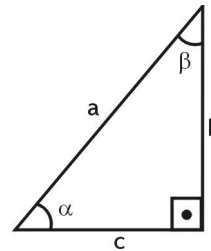
Cálculo de $f^{-1}(x)$:

$$x = \frac{3y - 1}{2}$$

$$2x = 3y - 1 \Rightarrow y = \frac{2x + 1}{3}$$

$$f^{-1}(5) = \frac{2 \cdot 5 + 1}{3} = \frac{11}{3}$$

07 Letra C.



$$\text{tg} \alpha = \frac{b}{c} \Rightarrow \frac{\text{sen} \alpha}{\text{cos} \alpha} = \frac{b}{c}$$

08 Letra C.

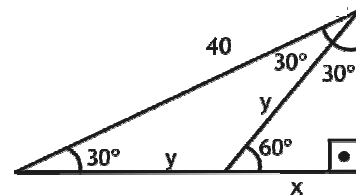
$$(IV) \frac{5\pi}{4} = \frac{5 \cdot 180^\circ}{4} = 225^\circ$$

$$(I) \frac{5\pi}{12} = \frac{5 \cdot 180^\circ}{12} = 75^\circ$$

$$(II) \frac{7\pi}{36} = \frac{35 \cdot 180^\circ}{36} = 35^\circ$$

$$(III) \frac{35\pi}{36} = \frac{35 \cdot 180^\circ}{36} = 175^\circ$$

09 Letra B.



$$\text{cos } 60^\circ = \frac{x}{y} = \frac{1}{2}$$

$$y = 2x$$

$$\text{cos } 30^\circ = \frac{3x}{40} = \frac{\sqrt{3}}{2}$$

$$3x = 20\sqrt{3}$$

$$x = \frac{20\sqrt{3}}{3}$$

10 Letra E.

$$\cos^2 \alpha = 1 - \sin^2 \alpha$$

$$\cos^2 \alpha = 1 - \frac{9}{16}$$

$$\cos^2 \alpha = \frac{7}{16} \rightarrow \cos \alpha = \frac{\sqrt{7}}{4}$$

11 Letra A.

$$\alpha = 300^\circ \cdot \frac{\pi}{180^\circ} = \frac{5\pi}{3}$$

$$2\text{km} = 2000\text{m}$$

$$L = \alpha \cdot R$$

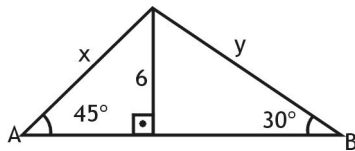
$$2000 = \frac{5\pi}{3} \cdot R \rightarrow R = 382$$

12 Letra E.

$$\left(\sin \frac{\pi}{4} + \cos \frac{\pi}{4} \right)^2$$

$$\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} \right)^2 = \left(\frac{2\sqrt{2}}{2} \right)^2 = 2$$

13 Letra B.



$$\sin 45^\circ = \frac{6}{x} = \frac{\sqrt{2}}{2} \Rightarrow x = 6\sqrt{2}$$

$$\sin 30^\circ = \frac{6}{y} = \frac{1}{2} \Rightarrow y = 12$$

$$x + y = 6\sqrt{2} + 12 = 8,4 + 12 = 20,4$$

14 Letra A.

$$\text{Altura máxima} = y_v = \frac{-\Delta}{4a} = \frac{-1}{4 \cdot \left(\frac{-1}{4}\right)} = 1$$

Distância entre o coronel e a bola:

$$\frac{-1}{4}x^2 + x = 0 \rightarrow \begin{cases} X_1 = 0 \text{ (não serve)} \\ X_2 = \frac{-1}{\frac{-1}{4}} = 4 \end{cases}$$

15 Letra D.

$$30^\circ \text{ ----- } 1\text{h}$$

$$\rightarrow x = \frac{2}{3}h$$

$$20^\circ \text{ ----- } x$$

Como 1h = 60min, então:

$$x = \frac{2}{3} \cdot 60 = 40 \text{ min.}$$

Portanto: 6h40min.