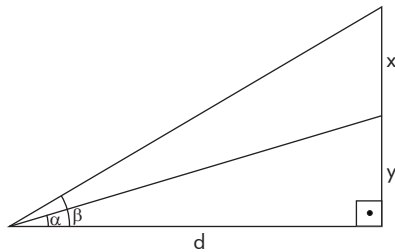


# Exercícios de casa resolvidos

Extensivo — Caderno 2 — Matemática II

Página 219

3.



$$\operatorname{tg} \alpha = \frac{y}{d} \rightarrow y = d \operatorname{tg} \alpha$$

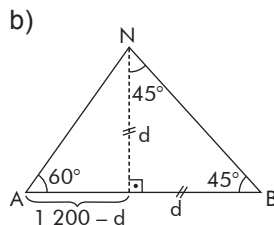
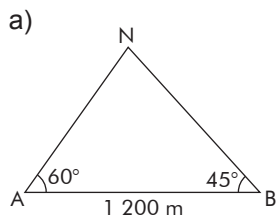
$$\operatorname{tg} \beta = \frac{(x+y)}{d} \rightarrow x+y = d \operatorname{tg} \beta$$

$$x + d \operatorname{tg} \alpha = d \operatorname{tg} \beta$$

$$x = d (\operatorname{tg} \beta - \operatorname{tg} \alpha)$$

Resposta: A

4.

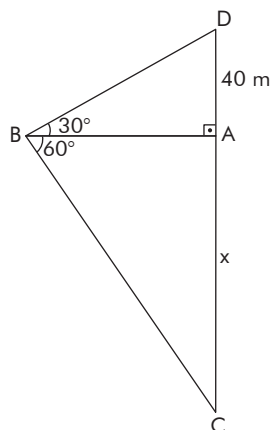


$$\operatorname{tg} 60^\circ = \frac{d}{1200 - d}$$

$$\sqrt{3} = \frac{d}{1200 - d}$$

$$d = 600(3 - \sqrt{3}) \text{ m}$$

9.



$$\operatorname{tg} 30^\circ = \frac{40}{\overline{AB}}$$

$$\frac{\sqrt{3}}{3} = \frac{40}{\overline{AB}}$$

$$\overline{AB} = \frac{120}{\sqrt{3}}$$

$$\operatorname{tg} 60^\circ = \frac{x}{\overline{AB}}$$

$$\sqrt{3} = \frac{x}{\overline{AB}}$$

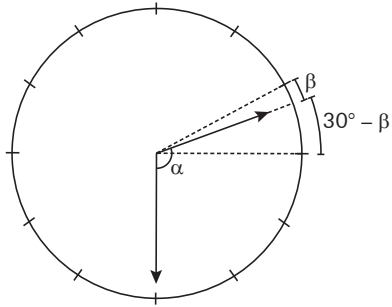
$$x = \sqrt{3} \overline{AB}$$

$$x = \sqrt{3} \frac{120}{\sqrt{3}}$$

$$x = 120 \text{ m}$$

Página 222

5.



$30^\circ$  — 60 min.

$\beta$  — 30 min.

$\beta = 15^\circ$

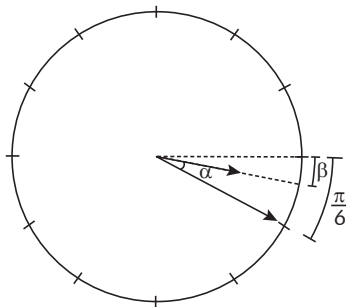
$$\alpha = 3 \cdot 30^\circ + 30^\circ - \beta$$

$$\alpha = 90^\circ + 15^\circ$$

$$\alpha = 105^\circ$$

Resposta: D

6.



$\frac{\pi}{6}$  — 60 min.

$\beta$  — 20 min.

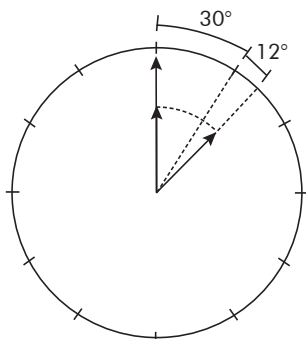
$$\beta = \frac{\pi}{18}$$

$$\alpha = \frac{\pi}{6} - \frac{\pi}{18}$$

$$\alpha = \frac{\pi}{9}$$

Resposta: B

7.



$30^\circ$  — 60 min.

$12^\circ$  — x min.

x = 24 min.

**13 h 24 min.**

## Página 225

$$4. \cos^2\left(\frac{2\pi}{3}\right) = \left(\cos\frac{2\pi}{3}\right)^2 = \left(-\frac{1}{2}\right)^2 = \frac{1}{4}$$

Resposta: D

$$5. d) \frac{2 \operatorname{sen} \pi/2 + \operatorname{sen} 2(\pi/2)}{\operatorname{sen} \frac{(\pi/2)}{2}} = \frac{2 \operatorname{sen} \pi/2 + \operatorname{sen} \pi}{\operatorname{sen} \pi/4} = \frac{2 \cdot 1 + 0}{\frac{\sqrt{2}}{2}} = 2\sqrt{2}$$

$$6. a) y = 2 - \cos 30^\circ - 2 \cos 2 \cdot 30^\circ$$

$$y = 2 - \cos 30^\circ - 2 \cos 60^\circ$$

$$y = 2 - \frac{\sqrt{3}}{2} - 2 \cdot \frac{1}{2}$$

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

$$b) y = 2 - \cos \pi - 2 \cos 2 \cdot \pi$$

$$y = 2 - (-1) - 2(1)$$

$$y = 2 + 1 - 2 = 1$$

## Página 227

$$3. a) \frac{y-3}{4} = \operatorname{sen} x$$

$$-1 \leq \operatorname{sen} x \leq 1$$

$$-1 \leq \frac{y-3}{4} \leq 1$$

$$-4 \leq y-3 \leq 4$$

$$-1 \leq y \leq 7$$

$$b) \operatorname{sen} x = 1 - y$$

$$-1 \leq \operatorname{sen} x \leq 1$$

$$-1 \leq 1 - y \leq 1$$

$$-2 \leq -y \leq 0$$

$$2 \geq y \geq 0$$

$$0 \leq y \leq 2$$

$$c) \operatorname{sen}^2 x = \frac{y+1}{2}$$

$$0 \leq \operatorname{sen}^2 x \leq 1$$

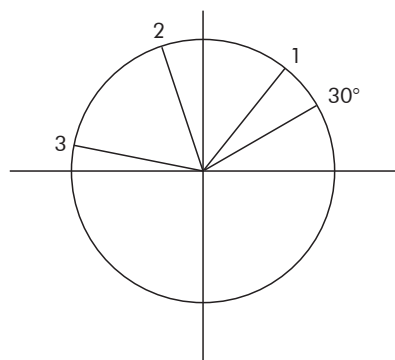
$$0 \leq \frac{y+1}{2} \leq 1$$

$$0 \leq y+1 \leq 2$$

$$-1 \leq y \leq 1$$

## Página 228

$$8. 1 \cong 57^\circ \Rightarrow 2 \cong 114^\circ; 3 \cong 171^\circ$$



Observando o ciclo trigonométrico, é possível observar que:

1.  $\operatorname{sen} 2 > \operatorname{sen} 3$ ; portanto, I é verdadeira.
2.  $\operatorname{sen} 1 > \operatorname{sen} 30^\circ$ ; portanto, II é verdadeira.
3.  $\cos 2 > \cos 3$ ; portanto, III é verdadeira.

Resposta: A

## Página 231

$$4. \frac{1920^\circ}{120^\circ} \left| \frac{360^\circ}{5} \right.$$

Efetuada a divisão acima, podemos afirmar que o  $1920^\circ$  ocupa, no ciclo trigonométrico, posição equivalente à do  $120^\circ$ ; portanto:

$$y = \operatorname{tg} 1920^\circ = \operatorname{tg} 120^\circ = -\operatorname{tg} 60^\circ = -\sqrt{3}$$

**Resposta:** B

$$7. \text{ Existe } \operatorname{tg} \left( 2x - \frac{\pi}{3} \right) \text{ se } 2x - \frac{\pi}{3} \neq \frac{\pi}{2} + k\pi \Rightarrow 2x \neq \frac{\pi}{2} + \frac{\pi}{3} + k\pi \Rightarrow 2x \neq \frac{5\pi}{6} + k\pi \Rightarrow$$

$$\Rightarrow x \neq \frac{5\pi}{12} + \frac{k\pi}{2} \Rightarrow x \neq \frac{\pi}{12}(5 + 6k), k \in \mathbf{Z}$$

**Resposta:** A