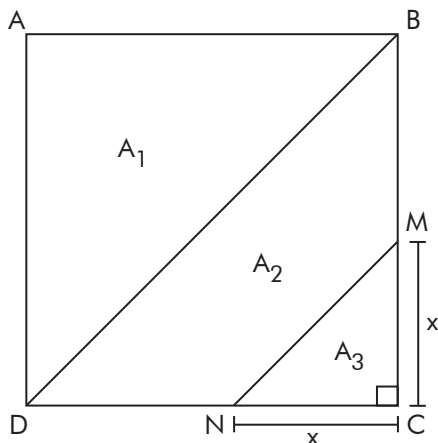


Exercícios de casa resolvidos

Extensivo — Caderno 5 — Matemática III

Aulas de 24 a 27 – Página 164

Exercício de sala 5.



$$A_1 = \frac{1 \cdot 1}{2} = \frac{1}{2}$$

$$A_2 = \frac{1}{2} - \frac{x^2}{2}$$

$$A_3 = \frac{x^2}{2}$$

$$\text{P.A. : } A_2 = \frac{A_1 + A_3}{2}$$

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

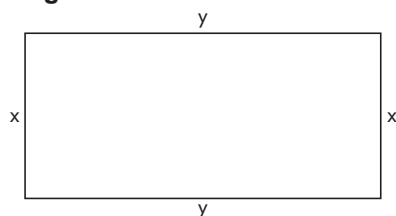
$$\frac{1}{2} = \frac{3x^2}{2}$$

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

Resposta: E

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6.



$$\begin{cases} 2x + 2y = 100 \Rightarrow y = 50 - x \\ A = x \cdot y \end{cases}$$

$$A(x) = x \cdot (50 - x)$$

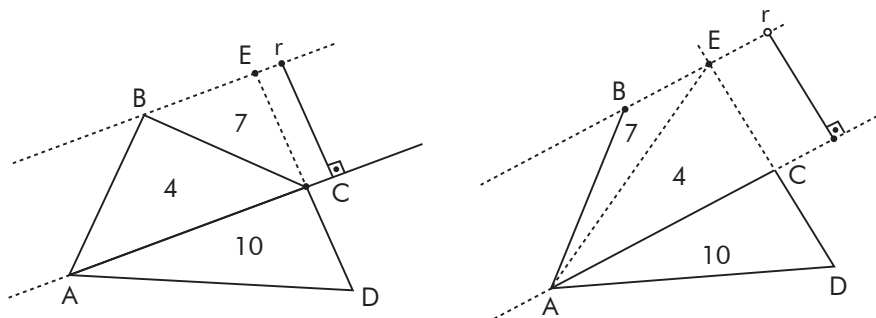
$$A(x) = 50x - x^2$$

$$A_{\text{máx}} = y_v = \frac{-\Delta}{4a} = \frac{-2500}{-4} = 625$$

Resposta: C

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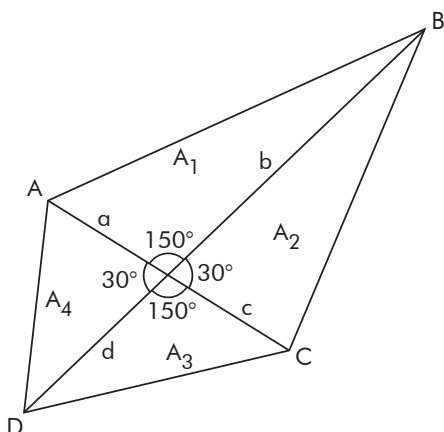
4.



Como a reta r e o segmento \overline{AC} são paralelos aos triângulos ABC e AEC , de mesma base AC , têm alturas iguais, logo, áreas iguais. Daí, a área do $\triangle BCE$ é 7.

Resposta: B

5.



Pelo enunciado, $(a + c) \cdot (b + d) = 100$.

Área do quadrilátero: $S = A_1 + A_2 + A_3 + A_4$

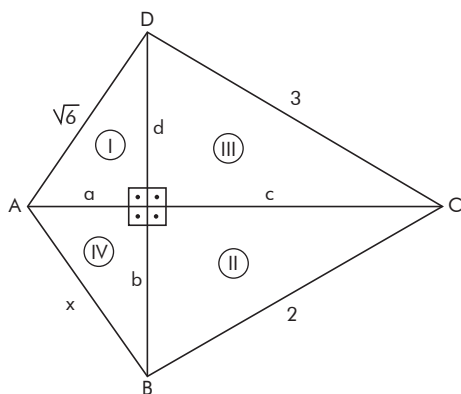
$$S = \frac{1}{2} ab \sin 150^\circ + \frac{1}{2} bc \sin 30^\circ + \frac{1}{2} cd \sin 150^\circ + \frac{1}{2} da \sin 30^\circ$$

$$S = \frac{1}{4} (ab + bc + cd + da) = \frac{1}{4} \cdot 100 = 25 \text{ em cm}^2$$

Resposta: B

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Exercício complementar 9.



Pitágoras

$$\begin{cases} a^2 + d^2 = 6 & \text{I} \\ c^2 + b^2 = 4 & \text{II} \end{cases} \text{ e } \begin{cases} a^2 + b^2 = x^2 & \text{IV} \\ c^2 + d^2 = 9 & \text{III} \end{cases}$$

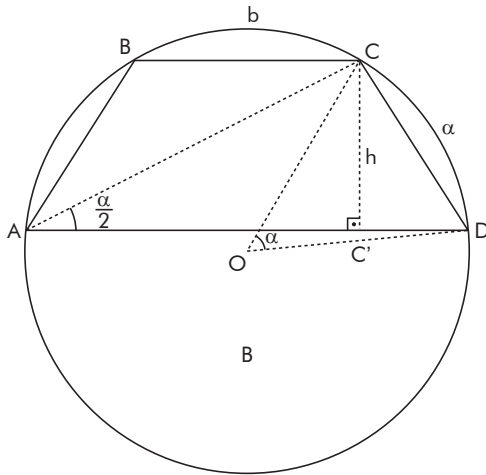
Somando I com II , e III com IV : $a^2 + d^2 + c^2 + b^2 = 10$ e $a^2 + b^2 + c^2 + d^2 = x^2 + 9$
 $10 = x^2 + 9$

$$x = 1$$

Resposta: A

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Exercício complementar 13.



Área do trapézio

$$A = \frac{(B+b)}{2} \cdot h$$

Comprimento do segmento AC'

$$\overline{AD} - \overline{C'D} = B - \frac{B-b}{2} = \frac{B+b}{2}$$

Tangente do ângulo $\frac{\alpha}{2}$ no $\triangle ACC'$:

$$\operatorname{tg}\left(\frac{\alpha}{2}\right) = \frac{h}{\left(\frac{B+b}{2}\right)} \Leftrightarrow \frac{B+b}{2} = \frac{h}{\operatorname{tg}\left(\frac{\alpha}{2}\right)} \Leftrightarrow \frac{B+b}{2} = h \cdot \operatorname{cotg}\left(\frac{\alpha}{2}\right)$$

Área do trapézio: $A = \left(\frac{B+b}{2}\right) \cdot h = h^2 \cdot \operatorname{cotg}\left(\frac{\alpha}{2}\right)$

Resposta: D