



Professor: Marcos Paulo

01	02	03	04	05	06	07	08	09	10
A	C	C	C	C	C	A	B	A	B

01. Raízes reais e iguais a $\Delta = 0, 0 \leq \theta \leq 2\pi$.

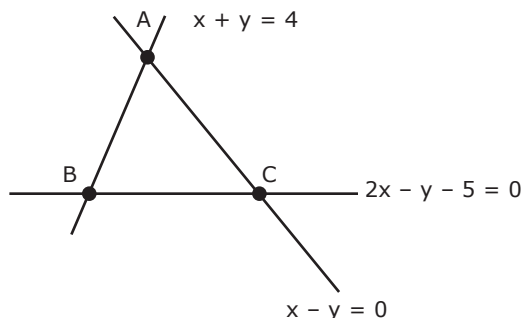
$$\Delta = (-2\text{sen}\theta)^2 - 4 \cdot 1 \cdot \text{cos}^2\theta = 0$$

$$4\text{sen}^2\theta - 4\text{cos}^2\theta = 0$$

$$\text{sen}^2\theta = \text{cos}^2\theta = 0$$

$$\theta = \frac{\pi}{4}, \theta = \frac{3\pi}{4}, \theta = \frac{5\pi}{4}, \theta = \frac{7\pi}{4}$$

02.



$$A \begin{cases} x + y = 4 \\ x - y = 0 \end{cases} A(2, 2)$$

$$B \begin{cases} x + y = 4 \\ 2x - y = 5 \end{cases} B(3, 1)$$

$$C \begin{cases} 2x - y = 5 \\ x - y = 0 \end{cases} C(5, 5)$$

$$\text{Det} = \begin{vmatrix} 2 & 2 \\ 3 & 1 \\ 5 & 5 \\ 2 & 2 \end{vmatrix}$$

$$\text{Det} = 2 + 15 + 10 - 6 - 5 - 10$$

$$\text{Det} = 6$$

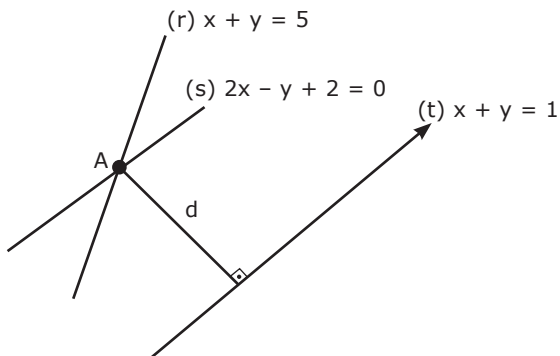
$$\text{Área} = \frac{|6|}{2} = 3 \text{ u.a}$$

03. Obs.: $\text{sen}2x = 2\text{sen}x \cdot \text{cos}x \Leftrightarrow 2\text{sen}x \cdot \text{cos}x = \frac{1}{2}$

$$\text{tg}x + \text{cotg}x = \frac{\text{sen}x}{\text{cos}x} + \frac{\text{cos}x}{\text{sen}x} = \frac{\text{sen}^2x + \text{cos}^2x}{\text{sen}x \cdot \text{cos}x}$$

$$\text{tg}x + \text{cotg}x = \frac{1}{\text{sen}x \cdot \text{cos}x} = \frac{1}{\frac{1}{4}} = 4$$

04.



$$\text{Ponto A} \begin{cases} x + y = 5 \\ 2x - y = -2 \end{cases} (1, 4)$$

$$d_{A,t} = \frac{|1 \cdot 1 + 4 \cdot 1 - 1|}{\sqrt{1^2 + 1^2}} = \frac{4}{\sqrt{2}} = 2\sqrt{2} \text{ u.c.}$$

05. $P(3, 15) \quad f(3) = 3m + n = 15 \quad f(x) = 3x + 6$

$$2m = n \text{ (P.A.)} \quad f\left(\frac{1}{3}\right) = 3 \cdot \frac{1}{3} + 6 = 7$$

$$m = 3 \text{ e } n = 6$$

06. $f = (a_0, a_1, a_2, \dots, a_n, \dots)$

$$a_0 = 1, a_1 = 2 \quad \text{Lei de recorrência } a_n = a_{n+1} \cdot a_{n-1}$$

$$n = 1 \quad a_1 = a_2 \cdot a_0 \quad 2 = a_2 \cdot 1 \quad a_2 = 2$$

$$n = 2 \quad a_2 = a_3 \cdot a_1 \quad 2 = a_3 \cdot 2 \quad a_3 = 1$$

$$n = 3 \quad a_3 = a_4 \cdot a_2 \quad 1 = a_4 \cdot 2 \quad a_4 = \frac{1}{2}$$

$$n = 4 \quad a_4 = a_5 \cdot a_3 \quad \frac{1}{2} = a_5 \cdot 1 \quad a_5 = \frac{1}{2}$$

$$\left. \begin{matrix} a_4 = a_5 \end{matrix} \right\}$$

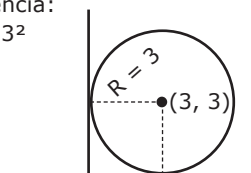
07. Equação da circunferência:

$$(x - 3)^2 + (y - 3)^2 = 3^2$$

$$x = 1$$

$$(-2)^2 + (-2)^2 - 9 =$$

$$= 4 + 4 - 9 = -1$$



08. $(4, -3)$

$$f_{(x)}^{-1} \rightarrow \text{Ponto médio } (2, 0) \rightarrow f_{(2)}^{-1} = 0$$

$$(0, 3)$$

09. Volume = $(x - 4)(x - 3) \frac{(2x + 3)}{3} = 30 \quad x > 4$

$$(x - 4)(x - 3) \frac{(2x + 3)}{3} = 2 \cdot 3 \cdot 5$$

$$x - 4 = 2 \quad x = 6$$

$$x - 3 = 3 \quad x = 6$$

$$\frac{2x + 3}{3} = 5 \quad x = 6$$

$$\text{Dimensões} \begin{cases} 2 \\ 3 \\ 5 \end{cases}$$

$$\text{Área total} = (2 \cdot 3 + 2 \cdot 5 + 3 \cdot 5)2 = 62$$

10. $y = -x^2 + 4x$ Raízes $\begin{cases} x = 0 \\ x = 4 \end{cases}$

$$\begin{cases} y = -x^2 + 4x \\ y = 2x \end{cases} \quad -x^2 + 4x = 2x$$

$$-x^2 + 2x = 0$$

$$\begin{cases} x = 0 \\ x = 2 \end{cases}$$

$$\text{Área} = \frac{4 \cdot 4}{2} = 8 \text{ u.a.}$$

