

3ª Série do Ensino Médio - Gabarito Comentado

**MATEMÁTICA**

**01. Letra C.**

(1; 5; 9; 13...)

P.A. de razão = 4

$$a_{60} = a_1 + 59R = 1 + 59 \cdot 4 = 1 + 236 = 237$$

**02. Letra C.**

É interessante observar a soma dos valores em cada linha:  $1 = 1^3$ ;  $8 = 2^3$ ;  $27 = 3^3$ ;  $64 = 4^3$ ;...

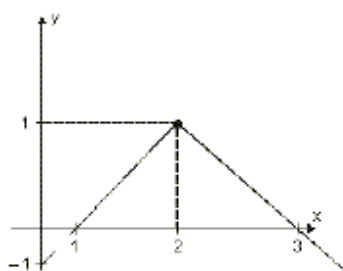
\_ Na 10ª linha =  $10^3$

**03. Letra A.**

$$|x-2| \begin{matrix} -x+2 & x-2 \\ \hline & 2 \end{matrix} \rightarrow x$$

$$f_1(x) = 1 - (-x + 2) = x - 1$$

$$f_2(x) = 1 - (x - 2) = -x + 3$$



**04. Letra E.**

$$5 - ||2x - 1| - 6| \geq 0$$

$$|2x - 1| - 6 \leq 5$$

$$-5 \leq |2x - 1| - 6 \leq 5$$

$$1 \leq |2x - 1| \leq 11$$

$$|2x - 1| \geq 1 \cup |2x - 1| \leq 11$$

$$x \leq 0 \cup x \geq 1 \cup -5 \leq x \leq 6$$

**05. Letra A.**

$$x \geq 0$$

$$|x| = x$$

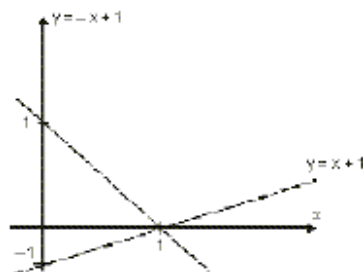
$$y = x + 2$$

$$\text{se } x < 0$$

$$|x| = -x$$

$$y = -x + 2$$

**06. Letra D.**



**07. Letra A**

Hipótesis:

$$I \quad x \geq 0 \cup y \geq 0$$

$$x + y = 4$$

$$II \quad x \geq 0 \cup y \leq 0$$

$$x - y = 4$$

$$\text{III } x \in [0, 3] \wedge y \in [0, 4]$$

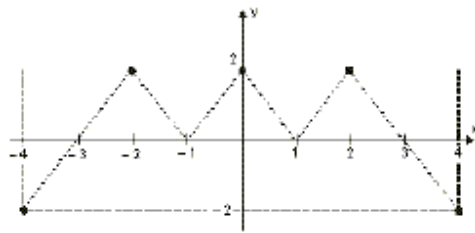
$$x + y = 4$$

$$\text{IV } x \in [0, 4] \wedge y \in [0, 4]$$

$$x - y = -4$$

**08. Letra E.**

$f(|x|)$  @ simetria em relação ao eixo  $\overline{Oy}$ .



**09. Letra A.**

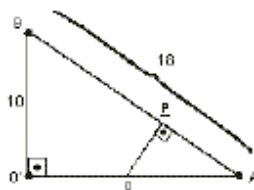
Retas reversas são retas não coplanares.

**10. Letra A.**

$DBO'A \sim DOPA$

$$\frac{OA}{OB} = \frac{5}{10}$$

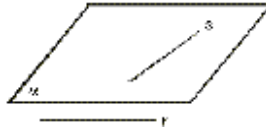
$$\overline{BA} = 9$$



**11. Letra C.**

I (F) podem ser semelhantes

II (F)  $r // a \wedge r \perp s$



III\_ (F) r // a Û s // a

r<sup>1</sup> s



**12. Letra E.**

$$V = 12$$

$$3f_3 + 11f_4 = 2A$$

$$3 \cdot 11 + 11 \cdot 1 = 2A$$

$$2A = 44$$

$$A = 22$$

**13. Letra A.**

$$n \cdot 360^\circ + 4 \cdot 180^\circ = 12 \cdot 90^\circ$$

$$n \cdot 360^\circ = 2 \cdot 180^\circ$$

$$n = 1$$

$$f_4 = 1$$

$$3f_3 + 4f_4 = 2A$$

$$3 \cdot 4 + 4 \cdot 1 = 2A$$

$$A = 8$$

**14. Letra D.**

$$3v_3 + 4v_4 = 2A$$

$$3 \cdot 4 + 4 \cdot 5 = 2A$$

$$A = 16$$

$$v + F = A + 2$$

$$9 + F = 16 + 2$$

$$F = 9$$

**15. Letra C.**

$$100 \cdot \frac{20 \cdot 20 \cdot 30}{40 \cdot 40 \cdot 60} = 100 \cdot \frac{1}{8}$$

$$= 12,5$$

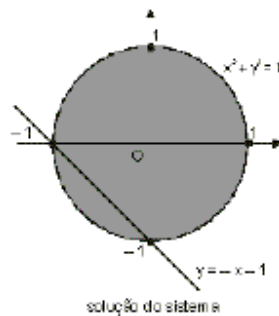
**16. Letra E.**

$$V = A_b \cdot h = (3,4) \cdot (2,5) \cdot (1,2) =$$

$$10,2 \text{ m}^3$$

$$\frac{336}{10,2} = 32,94 = 33$$

**17. Letra A.**



$$\text{Área} = \text{Área quadrante} - \text{Área triângulo}$$

$$-\frac{x \cdot y}{4} - \frac{1 \cdot 1}{2} = -\frac{x \cdot 1}{4} - \frac{1}{2}$$

**18. Letra D.**

$$\text{Se } y \geq 0 \text{ P } |y| = y \text{ P } x^2 + y^2 - 6y = 0$$

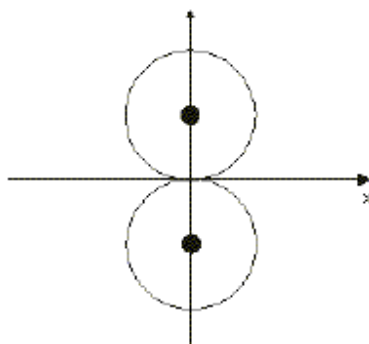
$$\text{P } x^2 + y^2 - 6y = 0 \text{ P } x^2 + y^2 - 2 \cdot 3 \cdot y + 9 = 0 + 9$$

$$P x^2 + (y - 3)^2 = 9 \quad P C (0; 3)$$

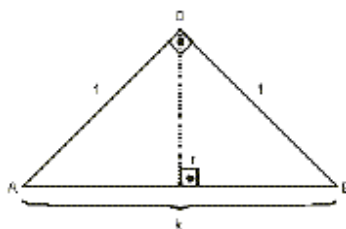
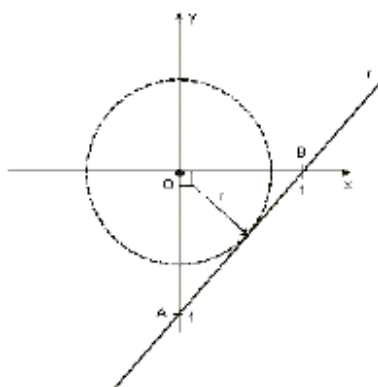
$$\text{Se } y < 0 \quad P |y| = -y \quad P x^2 + y^2 + 6y = 0$$

$$P x^2 + y^2 + 6y + 9 = 0 + 9$$

$$P x^2 + (y + 3)^2 = 9 \quad P C (0; -3)$$



**19. Letra D.**



$$K^2 = 1^2 + 1^2$$

$$K^2 = 2$$

$$k = \sqrt{2}$$

$$a \cdot h = b \cdot c$$

$$k \cdot r = 1 \cdot 1$$

$$\sqrt{2} \cdot r = 1 \cdot 1$$

$$r = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

## 20. Letra D.

Como  $MN = 2$  e  $R = 1$  e  $y_M = y_N = 3/2$

$$x_N = x_M + 2 = 6 \quad N(6; 3/2)$$

Como  $MQ = 1$  e  $Q(4; \frac{3}{2} + 1) = (4; \frac{5}{2})$  e  $P(6; \frac{5}{2})$

Seja  $C$  o centro da semicircunferência e  $C = \frac{Q+P}{2} = \frac{(4; \frac{5}{2}) + (6; \frac{5}{2})}{2}$

$$C = (5; \frac{5}{2})$$

$(x - 5)^2 + (y - \frac{5}{2})^2 = 1$  (equação da circunferência que passa por  $Q$ ,  $R$  e  $P$ )

$$(y - \frac{5}{2})^2 = 1 - (x - 5)^2$$

$$y - \frac{5}{2} = \pm \sqrt{1 - (x - 5)^2}$$

$$y = \frac{5}{2} \pm \sqrt{1 - (x - 5)^2}$$