# RESOLUÇÃO MADAN 2020

# PROVA DE ADMISSÃO

MADAN

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | A | 11 | C | 21 | C | 31 | B |
| 2 | D | 12 | A | 22 | E | 32 | C |
| 3 | B | 13 | B | 23 | B | 33 | B |
| 4 | D | 14 | D | 24 | A | 34 | B |
| 5 | C | 15 | A | 25 | E | 35 | D |
| 6 | A | 16 | B | 26 | D | 36 | D |
| 7 | B | 17 | A | 27 | B | 37 | B |
| 8 | D | 18 | C | 28 | B | 38 | D |
| 9 | E | 19 | C | 29 | D | 39 | A |
| 10 | A | 20 | C | 30 | B | 40 | D |

**1. ALTERNATIVA A**

Por tentativa, vemos:

$30 \cdot 32 \cdot 34 = 32640$ (Menor que o pedido)

$50 \cdot 52 \cdot 54 = 140400$ (Maior que o pedido)

$40 \cdot 42 \cdot 44 = 73720$

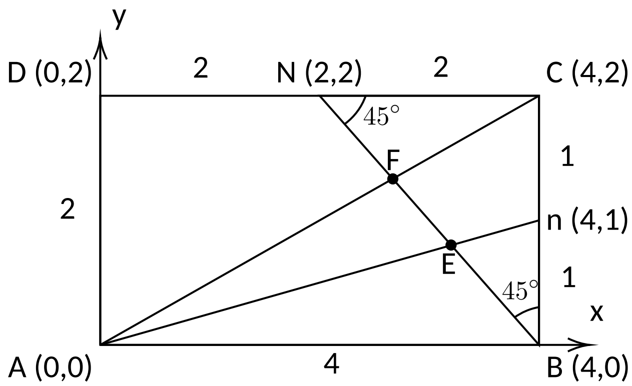
$42 \cdot 44 \cdot 46 = 85008$

$42 \cdot 44 \cdot 48 = 97152 \longrightarrow$ Essa é a procurada comparando ao enunciado(9XYZ2), onde X = 7, Y = 1 e Z = 5

$46 \cdot 48 \cdot 50 = 110400$

Logo, $\boxed{X + Y + Z = 7 + 1 + 5 = 13}$

**2. ALTERNATIVA D**




Pensando o retângulo como uma região no plano cartesiano onde A é a origem.

Reta $\bar{AC} : y = \frac{x}{2}$

Reta $\bar{An} : y = \frac{x}{4}$

Reta $\bar{Bn} : y = -x + 4$

Ponto F: interseção entre $\bar{AC}$ e $\bar{BN}$: $\frac{x_f}{2} = -x_f + 4 = \frac{8}{3}, y_F = \frac{4}{3}$

Ponto E: interseção entre $\bar{An}$ e $\bar{BN}$: $\frac{x_e}{2} = -x_E + 4 = \frac{16}{5}, y_E = \frac{4}{5}$

$$A_{AFE} = A_{AFB} - A_{AEB} = \frac{4y_F}{2} - \frac{4y_E}{2} = 2\left(\frac{4}{3} - \frac{4}{5}\right) = \frac{8 \cdot 2}{15} = \boxed{\frac{16}{15}}$$

**3. ALTERNATIVA B**

Repare que a expressão equivale a:

$$\frac{c^2(a+b) - a\cdot b(a+b) + c(b^2-a^2)}{c(a+b)^2 - a(a+b)^2} = \frac{c^2(a+b) - a\cdot b(a+b) + c(b-a)(a+b)}{(c-a)(a+b)^2}$$

$$= \frac{\cancel{(a+b)}(c^2 - a\cdot b + b - a)}{(c-a)(a+b)\cancel{(a+b)}} = \frac{c(c+b) - a(c+b)}{(c-a)(a+b)}$$

$$= \frac{(b+c)\cancel{(c-a)}}{\cancel{(c-a)}(a+b)} = \boxed{\frac{b+c}{a+b}}$$

**4. ALTERNATIVA D**

$$P(60002) = 60002(60002 - 2016) - 2017$$

$$K = 60002 - 57986 - 2017$$

$$P(-57986) = -57986(-57986 - 2016) - 2017$$

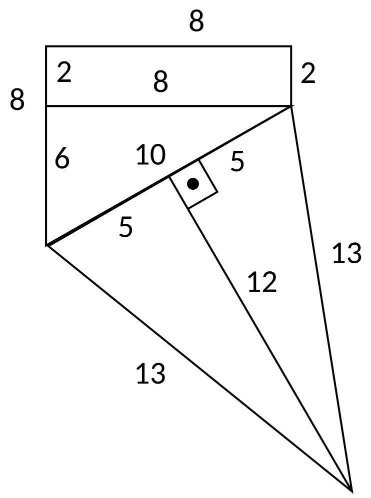
$$\boxed{P(-57986) = 60002 \cdot 57986 - 2017 = K}$$

**5. ALTERNATIVA C**

Supondo que o primeiro não seja advogado:
Primeiro: Médico
Segundo: Médico
Terceiro: Advogado

Supondo que o primeiro seja advogado:
Primeiro: Advogado
Segundo: Médico (o primeiro vai dizer que não é advogado)
Terceiro: Médico

**6. ALTERNATIVA A**

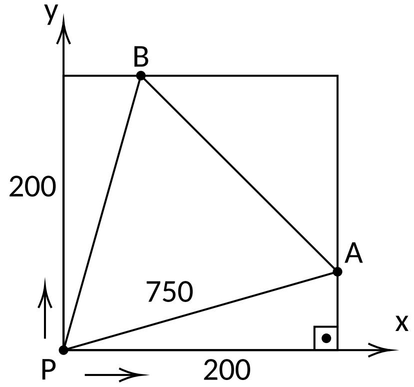



$$A = A_{\text{trapézio}} + A_{\text{isósceles}}$$

$$A = \frac{(8+2)\cdot 8}{2} + \frac{10\cdot 12}{2} = \frac{8\cdot 10}{2} + \frac{12\cdot 10}{2}$$

$$\boxed{A = 40 + 60 = 100}$$

**7. ALTERNATIVA B**




Tempo entre P e A:

$$\frac{200 + x}{V_1} = \frac{200 + 200 + 200 - x}{V_2}$$

$$\frac{V_2}{V_1} = \frac{600 - x}{200 + x}$$

Tempo entre A e B:

$$\frac{200 - x + 200 - y}{V_1} = \frac{x + 200 + 200 + y}{V_2} \implies \frac{V_2}{V_1} = \frac{400 + x + y}{400 - x - y} = \frac{600 - x}{200 + x} = \frac{400 + x + y}{400 - x - y}$$

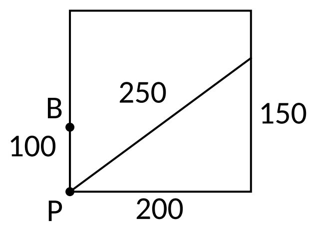
$$\implies 600 \cdot 400 - 1000x - 600y + \cancel{x^2} + x \cdot y = 200 \cdot 400 + 600x + 200y + \cancel{x^2} + \cancel{x \cdot y}$$

$$400^2 = 1600x + 800y \implies 1600 \cdot 100 = 1600x + 800y \implies 200 = 2x + y$$

Pitágoras:

$$200^2 + x^2 = 250^2 \implies x^2 = 50 \cdot 450$$

$x^2 = 3^2 + 5^2 + 10^2 \implies x = 3 \cdot 5 \cdot 10 \implies x = 150 \implies y = -100$ (B está no outro lado)



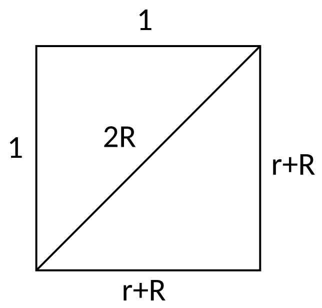

PB = 100

**8. ALTERNATIVA D**

$$\frac{3-3x+4x+4}{1-x^2}=\frac{1}{x} \implies \frac{7-x}{1-x^2}=\frac{1}{x} \implies 7x-\cancel{x^2}=1-\cancel{x^2} \implies x=\frac{1}{7}$$

$$\frac{1}{x^2}-\frac{7}{x}=49-49=0$$

**9. ALTERNATIVA E**




$$2R = \sqrt{2} \implies R = \frac{\sqrt{2}}{2}$$

$$r + R = 1 \implies r = \frac{2 - \sqrt{2}}{2}$$

$$A = 1 - \frac{\pi R^2}{2} - \frac{\pi r^2}{2} = 1 - \frac{\pi}{2}(R^2 + r^2) = 1 - \frac{\pi}{2}\left(\frac{1}{2} + 1 - \sqrt{2} + \frac{1}{2}\right)$$

$$A = 1 - \pi\left(1 - \frac{\sqrt{2}}{2}\right) = 1 + \pi\left(\frac{\sqrt{2}}{2} - 1\right)$$

**10. ALTERNATIVA A**

Seja a-2r, a-r, a, a+r, a+2r os termos da PA de razão r.

$$(a+2r)(a-2r)=57$$

$$a\cancel{-r}+a+a\cancel{+r}=33 \implies 3a=33 \implies a=11$$

$$a^2-4r^2=57 \implies 4r^2=121-57 \implies 4^2=64 \implies r^2=16 \implies r=4 \text{ (PA crescente)}$$

Último termo: $a+2r=11+2\cdot 4=19$

**11. ALTERNATIVA C**

$$x^2 + 2xy = y^2 - z^2 = (x+y)^2 - z^2 = (x+y+z)(x+y-z) =$$

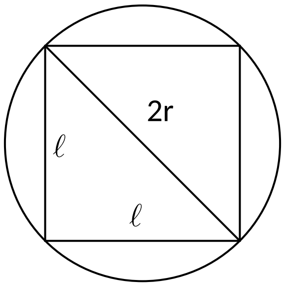
$$= \sqrt[4]{9} \cdot \sqrt{3} = \sqrt{3} \cdot \sqrt{3} = 3$$

**12. ALTERNATIVA A**

$$\begin{array}{r} A\,B\,C \\ A\,B\,C \\ +\;A\,B\,C \\ \hline B\,B\,B \end{array}$$

C = 1,2 e 3, não pode
C = 4, B = 2, não pode
C = 5 = B = 5, não pode
C = 6, B = 8, não pode
C = 7, B = 1, não pode
C = 8, B = 4, pode
C = 9, B = 7, não pode
C = 8 $\Longrightarrow$ B = 4 e A = 1, logo 15/07 é o aniversário de Cristiano.

**13. ALTERNATIVA B**




Pitágoras:

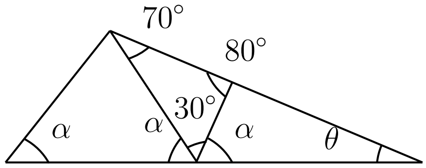
$$\cancel{2}\ell^2 = \overset{2}{\cancel{4}}r^2 \implies \ell^2 = 2r^2$$

$$\pi\ell^2 = 2 \cdot 314 \implies \ell^2 = \frac{628}{\pi}$$

$$A = 314 - \ell^2 = 314 - \frac{628}{\pi}$$

$$A = 314 - 200 = 114$$

**14. ALTERNATIVA D**

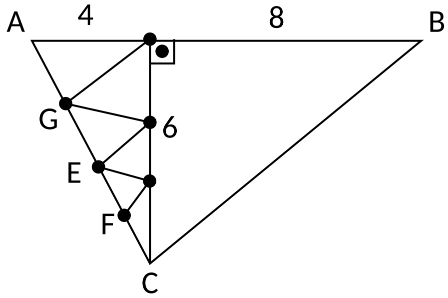



$$\theta + x = 80^\circ \implies x = 80^\circ - \theta$$

$$\alpha + 30^\circ + x = 180^\circ$$

$$\alpha + 30^\circ + 80^\circ - \theta = 180^\circ \implies \alpha - \theta = 70^\circ$$

**15. ALTERNATIVA A**




Semelhança:

$$\frac{AD}{AG} = \frac{AB}{AC} \implies \frac{4}{AG} = \frac{12}{AC} \implies \frac{AC}{AG} = 3$$

$$\frac{BD}{CD} = \frac{CD}{AD} \implies \frac{8}{CD} = \frac{CD}{4} \implies CD^2 = 32 \implies CD = 4\sqrt{2}$$

Pitágoras:

$$CD^2 + AD^2 = AC^2 \implies 32 + 16 = AC^2 \implies AC = 4\sqrt{3}$$

$$\frac{AB}{AC} = \frac{EG}{EF} \implies \frac{12}{4\sqrt{3}} = \frac{EG}{0,2}$$

$$\boxed{EG = 0,2\sqrt{3}}$$

**16. ALTERNATIVA B**

Seja $x = 2^n$ e $y = 2^m$, tem-se que:

$$2^2 \cdot 2^4 \cdot 2^6 \cdot 2^8 \cdot 2^{10} \cdot \dots \cdot 2^{2n} = 2^m$$

$$2^{2+4+6+8+\cdots+2n} = 2^m \implies 2 + 4 + 6 + 8 + 10 + \cdots + 2n = m$$

$$\frac{(2+2n)n}{2} = m \implies m = n(n+1)$$

$$2^n \cdot 2^m = 2^{99} \implies 2^{n+m} = 2^{99} \implies n + m \implies m = 99 - n$$

$$99 - n = n^2 + n \implies n^2 + 2n - 99 = 0$$

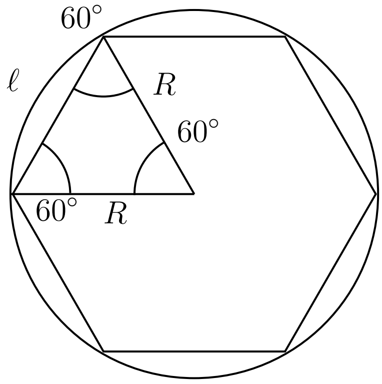
$$n = \frac{-2 + \sqrt{4 + 176}}{2} = \frac{-2 + 20}{2} = 9 \implies m = 90 \implies \boxed{y = 2^{90}}$$

**17. ALTERNATIVA A**

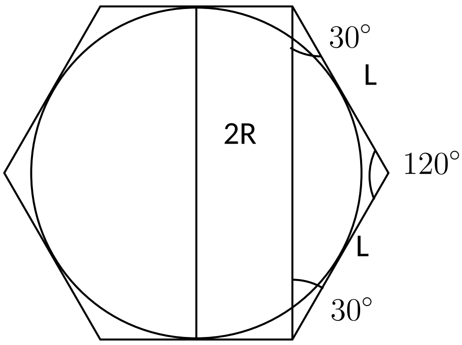
Regra de 3 composta:

$$\frac{9600}{4 \cdot 6} = \frac{2400}{t \cdot 20} \implies \boxed{t = 3}$$

**18. ALTERNATIVA C**




$$\ell = R$$




$$\frac{\ell}{L} = \frac{\cancel{R}\cdot\sqrt{3}}{2\cancel{R}} = \frac{\sqrt{3}}{2}$$

$$\frac{1}{sen(10^\circ} = \frac{2R}{sen(120^\circ} \implies \frac{L}{1}\cdot\cancel{2} = \frac{2R}{\sqrt{3}}\cdot\cancel{2} \implies \boxed{L = \frac{2R}{\sqrt{3}}}$$

**19. ALTERNATIVA C**

$$E = 2\sum_{0}^{\infty}\frac{n}{2^n} + \sum_{0}^{\infty}\frac{1}{2^n}$$

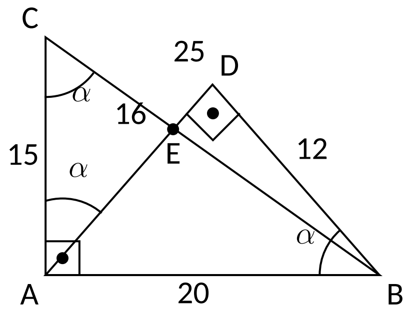
$$\sum_{0}^{\infty}\frac{1}{2^n} = \text{PG razão } \frac{1}{2} \text{e } \infty = 1 \implies \sum_{0}^{\infty}\frac{1}{2^n} = \frac{1}{1-\frac{1}{2}} = \frac{1}{\frac{1}{2}} = 2$$

$$\sum_{0}^{\infty}\frac{n}{2^n} = \text{PAG razão } q = \frac{1}{2} \text{e razão } r = 1 \implies \sum_{0}^{\infty}\frac{n}{2^n} = \frac{0}{\cancelto{0}{1-3}} + \frac{1\cdot\frac{1}{2}}{(1-\frac{1}{2})^2} = \frac{\frac{1}{2}}{\frac{1}{4}} = 2$$

$$E = 2 + 2 + 2 = 6$$

Obs.: $S_\infty \; PAG = \dfrac{a_1}{1-q} + \dfrac{r\cdot q}{(1-q)^2}$

**20. ALTERNATIVA C**




Pitágoras:

$$12^2 + 16^2 = AB^2 \implies AB = 20$$
$$15^2 + 20^2 = BC^2 \implies BC = 25$$

Lei dos senos em AEC:

$$\frac{AE}{sen(\alpha)} = \frac{15}{sen(\alpha + \beta)}$$

Sabendo que sabendo que $sen(\alpha + \beta) = sen\alpha \cdot cos\beta + sen\beta \cdot cos\alpha$

$$\implies \frac{AE}{\frac{4}{5}} = \frac{15}{\frac{4}{5} \cdot \frac{3}{5} + \frac{3}{5} \cdot \frac{4}{5}}$$

$$\implies AE = \frac{\frac{\cancelto{3}{15} \cdot 4}{\cancel{5}}}{\frac{24}{25}} = \frac{\cancelto{1}{12} \cdot 25}{\cancelto{2}{24}} = \frac{25}{2}$$

$$R_{\Delta ABE} = AEcosA$$

$$R_{\Delta ABE} = \frac{\cancelto{5}{25}}{2} \cdot \frac{3}{5} = \frac{15}{2} \implies A_{\Delta ABE} = \frac{\cancelto{5}{20} \cdot 15}{\cancel{4}}$$

$$\boxed{A_{\Delta ABE} = 75}$$

**21. ALTERNATIVA C**

$$(B-A)(B+A)=13 \implies (B-A)(B+A)=1\cdot 13$$
$$A+B=13$$
$$B-A=1$$
$$2B=14$$
$$B=7 \implies A=6 \implies C=3,4,5$$

$\boxed{AC=18,24,30}$

**22. ALTERNATIVA E**

$f(k) = (k+1)(k+2)$, $f(k)$ é divisível por 2 pois é um produto entre um número par e um ímpar.

Seja $n$ um inteiro:

$$\begin{cases} k = 3n \ : \ f(k) = (3n+1)\cdot(3n+2) & \text{não é divisível por 3} \implies \text{não é divisível por 6} \\ k = 3n+1 \ : \ f(k) = (3n+2)\cdot 3\cdot(n+1) & \text{é divisível por 3} \implies \text{é divisível por 6} \\ k = 3n+2 \ : \ f(k) = 3\cdot(n+1)\cdot(3n+4) & \text{é divisível por 3} \implies \text{é divisível por 6} \end{cases}$$

nW é divisível por 6. $\{1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 21, 22, 23, 25\} = 17$.

**23. ALTERNATIVA B**

Termo da 101ª linha. Repare que os valores aumentam com uma razão $r$ que aumenta de 2 em 2:

$$r_{1\to 2} = 4 \; r_{2\to 3} = 6$$

$$r_{n-1\to n} = 4 + 2 \cdot (n-2) = 2 \cdot n$$

$$a_n = a_1 + r_{1\to 2} + r_{2\to 2} + \cdots + r_{n-1\to n} = 1 + 4 + 6 + \cdots + 2n = 1 + \frac{(\overset{2}{\cancel{4}} + \overset{1}{\cancel{2}}n) \cdot (n-1)}{\cancel{2}}$$

$$a_n = 1 + (2+n) \cdot (n-1) = n^2 + n - 1$$

$$a_{101} = 101^2 + 101 - 1 = 101 \cdot (101+1) - 1 = 101 \cdot 102 - 1 = 10301$$

$$N_{10^{a}\,101} = a_{101} + 9 = 10310$$

**24. ALTERNATIVA A**

$$r = y_r = -2 \cdot x_r + 4$$

$$S = \frac{(4 + y_0) \cdot x_0}{2} = \frac{(4 + 4 - 2 \cdot x_0) \cdot x_0}{2} = \frac{\frac{4 \cdot 2}{2}}{2} = \frac{\not{4} \cdot 2}{\not{4}} \implies S = 2$$

$$2 = \frac{(8 - 2 \cdot x_0) \cdot x_0}{2} \implies 2 = 4 \cdot x_0 - x_0^2 \implies x_0^2 - 4 \cdot x_o + 2 = 0$$

$$x_0 = \frac{4 - \sqrt{16 - 8}}{2} = \frac{4 - 2 \cdot \sqrt{2}}{2} \implies \boxed{x_0 = 2 - \sqrt{2}}$$

**25. ALTERNATIVA E**

Repare que 4 será algarismo das unidades em $A_{3,2} = 6$ números. O mesmo vale para os demais números e para cada posição (dezenas e centenas). Assim:

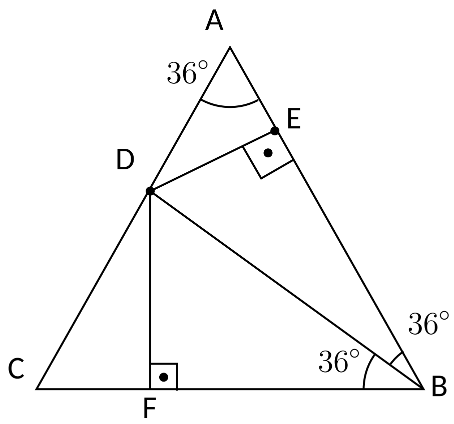
$$S = 4 \cdot 6 + 3 \cdot 6 + 2 \cdot 6 + 1 \cdot 6 + 4 \cdot 6 \cdot 10 + 3 \cdot 6 \cdot 10 + 2 \cdot 6 \cdot 10 + 1 \cdot 6 \cdot 10$$
$$+4 \cdot 6 \cdot 100 + 3 \cdot 6 \cdot 100 + 2 \cdot 6 \cdot 100 + 1 \cdot 6 \cdot 100$$
$$S = 6 \cdot (4 + 3 + 2 + 1) + 10 \cdot 6 \cdot (4 + 3 + 2 + 1) + 100 \cdot 6 \cdot (4 + 3 + 2 + 1)$$
$$S = 10 \cdot (6 + 60 + 600) = 10 \cdot 666 \implies \boxed{S = 6660}$$

**26. ALTERNATIVA D**

$$\frac{(8a^4 - 2a^2b^2 + 6ab^2 - 24a^3) \cdot ab}{(4a^2b + 2ab^2) \cdot (a^2 - 3a)} = \frac{\cancel{2a^2b} \cdot (4a^3 - ab^2 + 3b^2 - 12a^2)}{2a^2b \cdot (2a + b) \cdot (a - 3)}$$

$$= \frac{4a^2(a-3) - b^2(a-3)}{(2a+b)(a-3)} = \frac{\cancel{(2a+b)} \cdot (2a - b) \cdot \cancel{(a-3)}}{\cancel{(2a+b)} \cdot \cancel{(a-3)}} = 2a - b$$

**27. ALTERNATIVA B**




$$\frac{DE}{AD} = sen(36°), \; \frac{DF}{BF} = tg(36°),$$

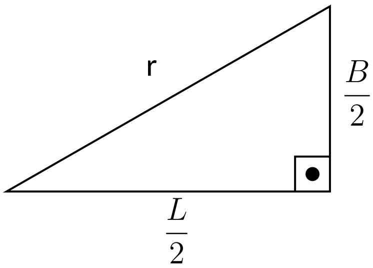
$$\frac{DE}{AD} \cdot \frac{DF}{BF} = \frac{sen(36°) \cdot sen(36°)}{cos(36°)} = \frac{sen^2(36°)}{cos(36°)} = \frac{1}{cos(36°)} - cos(36°)$$

$$sen(18°) = \frac{\sqrt{5}-1}{4} \implies sen^2(18°) = \frac{3-\sqrt{5}}{8}$$

$$cos36° = 1 - \cancel{2}^{\,1} \cdot \left(\frac{3-\sqrt{5}}{\cancel{8}^{\,4}}\right) = \frac{1+\sqrt{5}}{4} \implies \frac{1}{cos36°} - cos36° = \frac{4}{1+\sqrt{5}} - \frac{1+\sqrt{5}}{4} = \frac{3\cdot\sqrt{5}-5}{4}$$

**28. ALTERNATIVA B**

$$\frac{\sqrt{3}}{2} = \frac{B \cdot \frac{L}{2}}{2} = \frac{B \cdot \frac{\sqrt{6}}{2}}{2} \implies \frac{\sqrt{3}}{\cancel{2}} = \frac{B \cdot \sqrt{6}}{\cancelto{2}{4}} \implies 2 \cdot \cancel{\sqrt{3}} = B \cdot \cancel{\sqrt{3}} \cdot \sqrt{2} \implies B = \sqrt{2}$$




Pitágoras:

$$r^2 = \frac{B^2}{4} + \frac{L^2}{4}$$

$$r^2 = \frac{1}{2} + \frac{3}{2} = 2 \implies r = \sqrt{2}$$

**29. ALTERNATIVA D**

$$0,9 = \frac{m_{\text{sem água}}}{100} \implies m_{\text{sem água}} = 90$$

$$\frac{90}{m_T} = 0,2 \implies m_T = \frac{90}{2} \cdot 10 = 450\ g$$

**30. ALTERNATIVA B**

$$N_{\text{azul}} = \frac{498}{6} = 83$$

$$N_{\text{amarelo}} = \frac{500}{2} - 83 = 250 - 83 = 167 \qquad N_{\text{branco}} = \frac{498}{3} = 166$$

$$N_{\text{cinza}} = 500 - (83 + 167 + 166) \implies N_{\text{cinza}} = 84$$

**31. ALTERNATIVA B**

Máximo formado com 10 centavos: 2,9 reais. Logo deve formar 2,5 reais, no mínimo com 25 centavos. As maneiras são:

10 de 25 e 25 de 10
12 de 25 e 20 de 10
14 de 25 e 15 de 10

3 maneiras.

**32. ALTERNATIVA C**

$$bc = ah \implies bc = 4a \implies a = \frac{bc}{4}$$

$$\frac{a}{bc} + \frac{b}{ac} + \frac{c}{ab} = \frac{\cancel{bc}}{4\cancel{bc}} + \frac{4\cancel{b}}{\cancel{b}c^2} + \frac{4c}{b^2\cancel{c}} = \frac{1}{4} + 4\left(\frac{1}{b^2} + \frac{1}{c^2}\right)$$

$$= \frac{1}{4} + 4\left(\frac{b^2 + c^2}{b^2c^2}\right) = \frac{1}{4} + \frac{4a^2}{b^2c^2} = \frac{1}{4} + \frac{4b^2c^2}{16b^2c^2} = \frac{1}{4} + \frac{1}{4} = \frac{1}{2}$$

**33. ALTERNATIVA B**

$$f(0) = 2 \Longrightarrow c = 2$$
$$f(1) = 1 \Longrightarrow 1 = a + b + 2 \Longrightarrow a + b = -1$$
$$f(2) = 2 \Longrightarrow \cancel{2} = 4a + 2b + \cancel{2} \Longrightarrow b = -2a$$
$$a = 1 \; e \; b = -2$$
$$f(x) = x^2 - 2x + 2$$

$$y = 2 - (x+3)^2 + 2(x+3) - 2$$
$$y = \cancel{2} - x^2 - 6x - 7 + 2x + 6 - \cancel{2}$$
$$y = -x^2 - 4x - 3$$
$$r = -3$$
$$p = -2, \; y = 1$$

$$\frac{p-y}{r} = \frac{-2-1}{-3} = 1$$

**34. ALTERNATIVA B**

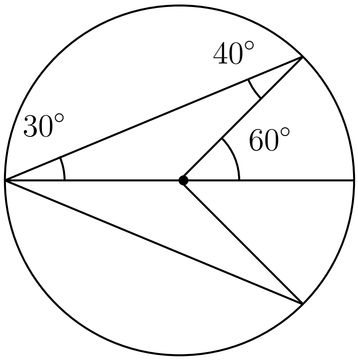
$$\begin{cases} 53 = x_2 + 2 \cdot y_0 \\ x_2 = x_1 + y_0 \\ y_0 = 2 \cdot x_1 - 1 \\ x_1 = x_0 + 3 \end{cases} \implies \begin{cases} 53 = x_1 + 3 \cdot y_0 \implies x_1 = 53 - 3 \cdot y_0 \implies x_1 = 8 \\ y_0 = 106 - 6 \cdot y_0 - 1 \implies 7 \cdot y_0 = 105 \implies y_0 = 15 \\ 8 = x_0 + 3 \implies \boxed{x_0 = 5} \end{cases}$$

**35. ALTERNATIVA D**

$$d_z = \frac{2 + d_z \cdot 0,5}{2} \implies 2 \cdot d_z = 2 + 0,5 \cdot d_z \implies d_z = \frac{4}{3}$$

$$m = \frac{\cancelto{2}{4}}{3} \cdot \frac{\cancel{3}}{\cancelto{1}{2}} = 2$$

**36. ALTERNATIVA D**

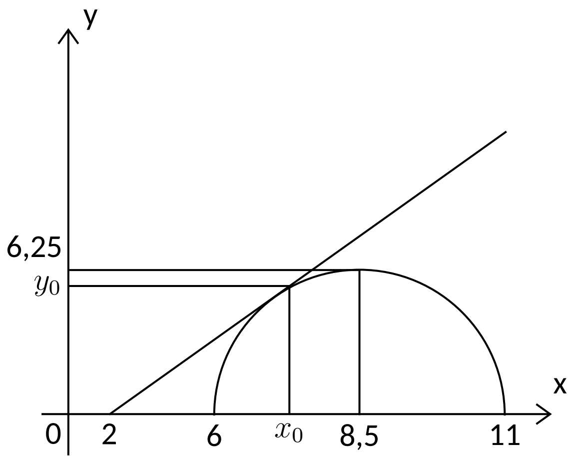



$$A = \pi \cdot 6^2 - \frac{\cancel{2} \cdot 6 \cdot 6 \cdot sen(120°)}{\cancel{2}} - \pi \cdot 6^2 \cdot \frac{\cancel{120°}^{1}}{\cancel{360°}^{3}}$$

$$A = 36 \cdot \pi - \frac{\cancel{36}^{18} \cdot \sqrt{3}}{\cancel{2}} - 12 \cdot \pi$$

$$A = 24 \cdot \pi - 18 \cdot \sqrt{3} = 72 - 18 \cdot \sqrt{3} = 18 \cdot (4 - \sqrt{3})$$

**37. ALTERNATIVA B**




$$\begin{cases} y_0 = a \cdot x_0 + b \\ y_0 = x_0^2 + 17 \cdot x_0 - 66 \end{cases} \implies x_0^2 + (a-17) \cdot x_0 + b + 66 = 0$$

$$\Delta = 0 \;:\; (a-17)^2 - 4 \cdot b - 264 = 0 \;:\; a^2 - 34 \cdot a - 4 \cdot b - 264 = 0$$

$$a^2 - 34 \cdot a + 25 - 4 \cdot b = 0 \qquad a^2 - 26 \cdot a + 25 = 0$$

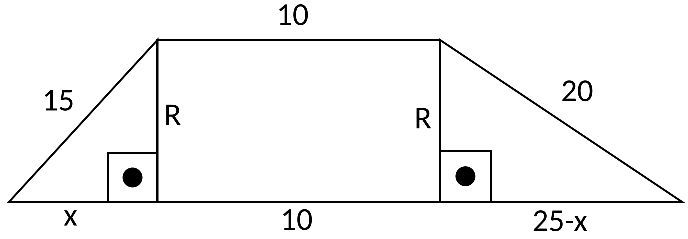
$$0 = 20 + b \implies b = -20 \qquad (0-1) \cdot (a-25) = 0$$

$$a = 25 \implies b = -50 \implies y = 25 \cdot x - 50 \implies x_0 = \frac{17-25}{2} = -5 < 6$$

$$a = 1 \implies b = -2 \implies y = x - 2 \implies x_0 = \frac{17-1}{2} = 8$$

$$\implies y = 6 \qquad (8, 6)$$

**38. ALTERNATIVA D**

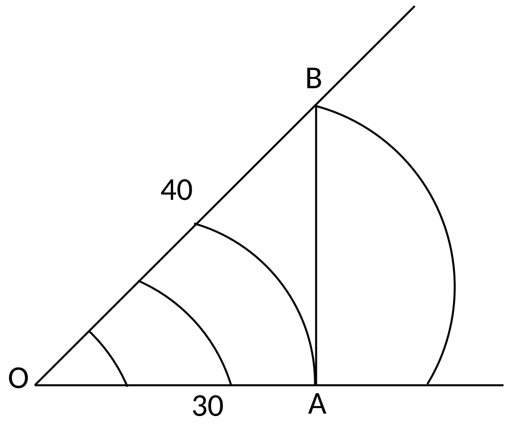



Pitágoras:

$$R^2 + x^2 = 15^2$$
$$R^2 + (25 - x^2) = 20^2$$
$$(25 - x)^2 - x^2 = 20^2 - 15^2 \implies 625 - 50 \cdot x + \cancel{x^2} - \cancel{x^2} = 400 - 225$$
$$\implies \cancelto{5}{50} \cdot x = \cancelto{45}{450} \implies x = 9 \implies R^2 = 225 - 81 = 144 \implies R = 12$$
$$\implies A = \frac{(35 + 10) \cdot \cancelto{6}{12}}{\cancel{2}} = 45 \cdot 6 = 270$$

**39. ALTERNATIVA A**

Isolando o triângulo:




$$A = \frac{\cancel{40}^{20} \cdot 30}{\cancel{2}} \cdot sen(30^\circ) - \frac{\pi \cdot 10^2 \cdot \cancel{30^\circ}^{1}}{\cancel{360^\circ}^{12}}$$

$$A = 20 \cdot \cancel{30}^{15} \cdot \frac{\cancel{1}}{\cancel{2}} - \frac{100 \cdot \pi}{12}$$

$$A = 300 - 25 = 275$$

**40. ALTERNATIVA D**

$$E = \frac{\cancel{(x^4 + y^4)} \cdot \cancel{(x^2 + y^2)} \cdot (x + y) \cdot (x - y)}{\cancel{(x^2 + y^2)} \cdot \cancel{(x^4 + y^4)}}$$

$$\implies E = (2020 + 2019) \cdot \cancelto{1}{(2020 - 2019)} = 4039$$