

$$A_1 \quad \begin{cases} \frac{(x+y)}{2} - \frac{xy}{2(x-y)} = \frac{(2+x)}{2} - \frac{(y^2-x)}{2(x-y)} \Rightarrow x^2 - y^2 - xy = 2x - 2y + x^2 - xy - y^2 \\ xy + x - 1 = (y+2)(x-1) \Rightarrow xy + x - 1 = xy - y + 2x - 2 \end{cases} \Rightarrow y = x - 1 \quad (1)$$

$$(2) \text{ en } (1): 2(x-1) = 3x \\ 2x - 2 = 3x \Rightarrow -2 = x \Rightarrow \text{en } (1): y = -3 \\ \Rightarrow x + y = -2 - 3 = \underline{\underline{-5}}$$

$$A_2 \quad \sqrt[n]{\frac{20^n \cdot 20}{4^n \cdot 4^2 + 4^{(n+1)}}} = \sqrt[n]{\frac{4^n \cdot 5^n \cdot 20}{4^n \cdot 16 + 4^n \cdot 4}} = \sqrt[n]{\frac{4^n \cdot 5^n \cdot 20}{4^n \cdot (20)}} = \sqrt[n]{5^n} = \underline{\underline{5}}$$

$$A_3 \quad 4x^2 + (-2m-5)x + (m-1) = 0 \quad y \quad \frac{x_2 + x_1}{x_1 x_2} = \frac{3}{5} \quad (1) \\ \Rightarrow a=4; b=-2m-5; c=m-1 \quad y \quad x_1 + x_2 = -\frac{b}{a} = \frac{2m+5}{4} \quad (2) \\ \text{Reemplazando } (2) \text{ en } (1) \text{ tenemos:} \quad x_1 x_2 = \frac{c}{a} = \frac{m-1}{4}$$

$$\frac{2m+5}{m-1} = \frac{3}{5} \Rightarrow 10m + 25 = 3m - 3 \\ 7m = -28 \\ \underline{\underline{m = -4}}$$

$$A_4. \quad a, b, c \text{ en P. 6.} \Rightarrow b = ax \text{ y } c = ax^2 \\ \text{con } a > 0 \text{ y } x > 0$$

$$\Rightarrow \log a, \log b, \log c \text{ satisfacen: } \log a, \log(ax), \log(ax^2)$$

$$\Rightarrow \underbrace{\log a}_u, \underbrace{\log a + \log x}_{u+d}, \underbrace{\log a + 2\log x}_{u+2d} \text{ están en P. A} \\ y \quad \underline{\underline{d = \log x}}$$

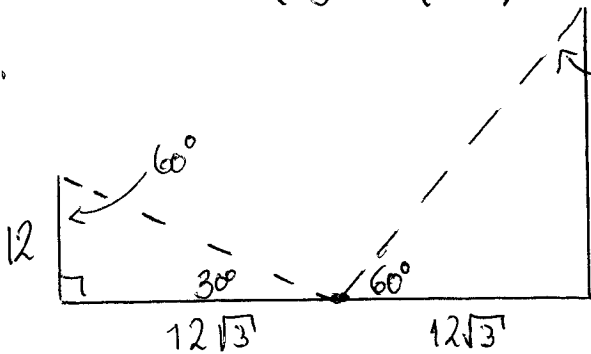
Resolución Examen Ingreso 1-2018 2ª opción BUSS-FcyT Fila 2  
GEOMETRÍA - TRIGONOMETRÍA

6.5  $\sin \theta = \frac{4}{5} = \frac{y}{x} \Rightarrow x^2 = x^2 - y^2 \Rightarrow x = \pm 3 = -3 \ (\theta \in \Pi^c)$

$\Rightarrow Z = \frac{\tan(\frac{6\pi}{2} - \theta) + \sin(\theta)}{\cos(\frac{3\pi}{2} - \theta) \cdot \tan(\theta)} = \frac{(-\tan \theta) + \sin \theta}{(-\sin \theta) \cdot \tan \theta}$

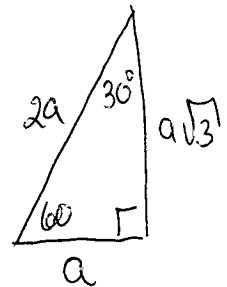
$\Rightarrow Z = \frac{-(-\frac{4}{3}) + \frac{4}{5}}{-\left(\frac{4}{5}\right) \cdot \left(-\frac{4}{3}\right)} = \frac{\frac{4}{3} + \frac{4}{5}}{\frac{16}{15}} = \frac{\frac{32}{15}}{\frac{16}{15}} = 2$

6.6.



$x = (12\sqrt{3})\sqrt{3} = 12 \cdot 3$

$x = 36$



6.7

$\cos 4x + \cos 2x = \cos x$

$2 \cos\left(\frac{4x+2x}{2}\right) \cos\left(\frac{4x-2x}{2}\right) = \cos x$

$2 \cos 3x \cos x - \cos x = 0$

$\Rightarrow \cos x (2 \cos 3x - 1) = 0$

$\cos x = 0 \quad \vee \quad \cos 3x = \frac{1}{2}$   
 $x = 90^\circ \pm k360^\circ$   
 $3x = 60^\circ \pm k360^\circ$

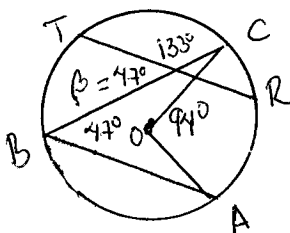
$x = 20^\circ \pm k120^\circ$

$3x = 300^\circ \pm k360^\circ$

$x = 100^\circ \pm k120^\circ$

$\Rightarrow x = 20^\circ$

6.8.



$\angle AOC = 94^\circ \text{ (dato)} \rightarrow \widehat{AC} = 94^\circ \text{ (x central)}$

$\angle CBA = 47^\circ \text{ (x inscrito)} = \frac{\widehat{AC}}{2}$

$\hat{\beta} = 47^\circ \text{ (alterno interno)}$

$\hat{\alpha} + \hat{\beta} = 180^\circ \text{ (suplem.)}$

$\hat{\alpha} = 180^\circ - 47^\circ$

$\hat{\alpha} = 133^\circ$

# #10

#9 1<sup>o</sup> bramo

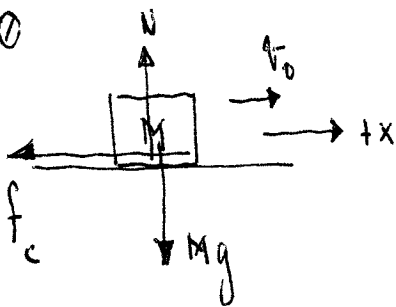
$$a = \frac{\Delta v}{\Delta t} = \frac{8}{4} = 2 \text{ [m/s}^2\text{]} \rightarrow x_1 = \frac{1}{2}(2)(4)^2 = 16 \text{ [m]}$$

$$\rightarrow D = 16 + 48 = 64 \text{ [m]} \quad \textcircled{d}$$

2<sup>do</sup> bramo

$$v = 8 \text{ [m/s]} \rightarrow x_2 = 8(10-4) = 48 \text{ [m]}$$

#10



$$y \quad N - Mg = 0 \rightarrow N = Mg$$

$$x \quad -\mu_c N = Ma$$

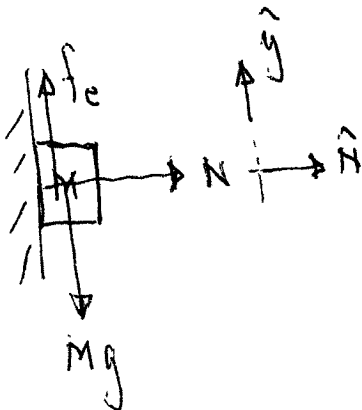
$$\hookrightarrow a = -\mu_c g$$

$$v^2 = v_0^2 + 2a \Delta x$$

$$0 = 5^2 + 2(-\mu_c g) \Delta x$$

$$\hookrightarrow \Delta x = \frac{25}{2(0,1)(10)} = 12,5 \text{ [m]} \quad \textcircled{a}$$

#11

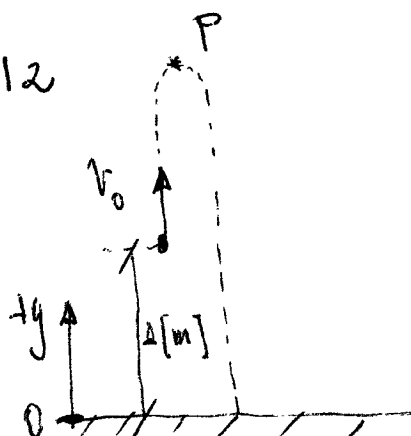


$$\hat{y}: \mu_e N - Mg = 0 \Rightarrow \mu_e \frac{Mv^2}{r} = Mg$$

$$\hat{x}: N = M \frac{v^2}{r}$$

$$v = \sqrt{\frac{rg}{\mu_e}} = \sqrt{\frac{20(10)}{\frac{1}{2}}} = 20 \text{ [m/s]} \quad \textcircled{d}$$

#12



$$y = 1 + 10t - \frac{g}{2}t^2$$

$$v = 10 - gt$$

$$\text{En P } t=0$$

$$0 = 10 - gt_p \rightarrow t_p = 1 \text{ [s]}$$

$$y_p = 1 + 10(1) - \frac{10}{2}(1)^2 = 6 \text{ [m]}$$

$$\rightarrow D = 5 + 6 = 11 \text{ [m]} \quad \textcircled{a}$$

## Resolución N° 2

Q13. ¿Cuántos gramos de etano ( $C_2H_6$ ) contendrán  $18,066 \times 10^{23}$  moléculas de  $C_2H_6$  (Masa molar =  $30 \text{ g/mol}$ ).

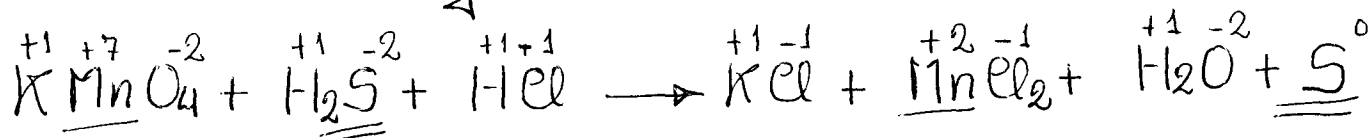
Datos:

$$M_{C_2H_6} = ?$$

$$\frac{18,066 \times 10^{23} \text{ moléculas } C_2H_6}{6,022 \times 10^{23} \text{ moléculas } C_2H_6} \times \frac{1 \text{ mol de } C_2H_6}{1} \times \frac{30 \text{ g de } C_2H_6}{1 \text{ mol de } C_2H_6} = 90 \text{ g de } C_2H_6$$

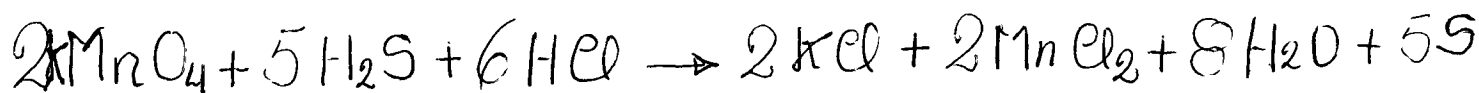
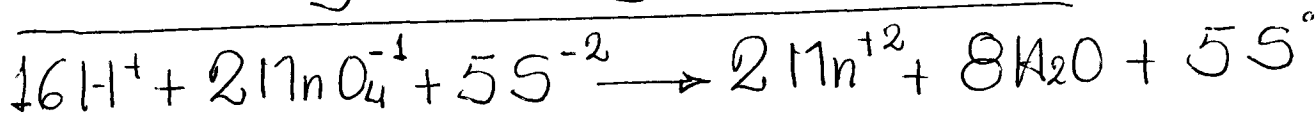
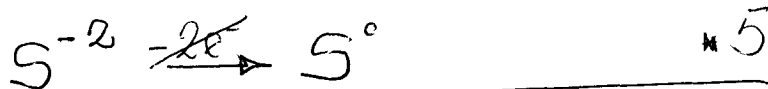
Rpta: D) 90 //

Q14. Considere la siguiente reacción:



Semirecacciones:

Ygualar atómicamente  
eléctricamente



Rpta: 6 C) 6 //

	R	P	
K:	2	2	✓
Mn:	2	2	✓
Cl:	6	6	✓
S:	5	5	✓
H:	16	16	✓
O:	8	8	✓

Q15. 120 g de un gas ocupan 200 L a  $-73^{\circ}\text{C}$  y 124,8 torr. ¿Cuál es la masa molecular del gas? ( $R = 62,4 \text{ torr L/mol K}$ )

Datos:

$$\frac{PV}{2} = nRT$$

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

$$V = 200 \text{ L}$$

$$T = -73 + 273$$

$$P = 124,8 \text{ torr}$$

$$M = ?$$

$$n = \frac{124,8 \text{ torr} \times 200 \text{ L}}{62,4 \text{ torr L/mol K} \times 200 \text{ K}} = 2 \text{ moles}$$

Como:  $n = \frac{m}{M}$

Despejamos  $M$

$$M = \frac{120}{2} = 60$$

Rpta: B) 60 //

Q16. ¿Que molaridad tiene una solución al 4,0% de NaOH? La densidad de la solución es de 1,028 g/mL

Datos:

Solución al 4,0% NaOH

$$100 \text{ g de solución} = 4,0 \text{ g de NaOH}$$

$$\rho = 1,028 \text{ g/mL}$$

$$1,028 \frac{\text{g de solución}}{\text{mL de solución}} \times \frac{4,0 \text{ g de NaOH}}{100 \text{ g de solución}} \times \frac{1 \text{ mol de NaOH}}{40 \text{ g de NaOH}} \times \frac{1000 \text{ mL de sol}}{1 \text{ L de soluc}}$$

$$= 1,028 \text{ M}$$

Rpta: A) 1.028 //