

Corrección 1<sup>er</sup> Control 1<sup>o</sup> Evaluación - Matemáticas I - 1<sup>o</sup> Bach 1-10-18

1) a)  $\frac{2-3\sqrt{2}}{2\sqrt{3}-\sqrt{6}} \cdot \frac{2\sqrt{3}+\sqrt{6}}{2\sqrt{3}+\sqrt{6}} = \frac{4\sqrt{3}+2\sqrt{6}-6\sqrt{6}-6\sqrt{3}}{12-6} = \frac{-2\sqrt{3}-4\sqrt{6}}{6} = \boxed{-\frac{\sqrt{3}+2\sqrt{6}}{3}}$

b)  $\frac{2\sqrt{3}}{\sqrt{3^3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3^3}}{3} = \boxed{\frac{2\sqrt{27}}{3}}$

c)  $(4\sqrt[3]{3}) - 2(3\sqrt[3]{3}) + \frac{5}{2}(2\sqrt[3]{3}) - 4\sqrt[3]{3} = 4\sqrt[3]{3} - 6\sqrt[3]{3} + 5\sqrt[3]{3} - 4\sqrt[3]{3} = \boxed{-\sqrt[3]{3}}$

d)  $\sqrt[4]{3^3} \sqrt[3]{3^2} = \sqrt[12]{3^9 \cdot 3^8} = \sqrt[12]{3^{17}} = \boxed{3\sqrt[12]{3^5}}$

2) a)  $\log_{\sqrt{2}} 64^x = 6 \rightarrow (\sqrt{2})^6 = 64^x \rightarrow 2^3 = 2^{6x} \rightarrow 3 = 6x \rightarrow \boxed{x = \frac{1}{2}}$

b)  $\log_x \frac{1}{2} = 2 \rightarrow x^2 = \frac{1}{2} \rightarrow x = \pm \sqrt{\frac{1}{2}} \rightarrow \boxed{x = \pm \sqrt{\frac{1}{2}}}$

c)  $\log_2 8x = 3 \rightarrow 8x = 2^3 \rightarrow 8x = 8 \rightarrow \boxed{x = 1}$

3) a)  $\log E + 2\log X - 3\log Y + \frac{1}{2}\log Z = 1$   
 $\log \frac{EX^2\sqrt{Z}}{Y^3} = 1$

$\frac{EX^2\sqrt{Z}}{Y^3} = 10 \rightarrow \boxed{E = \frac{10Y^3}{X^2\sqrt{Z}}}$

b)  $1.05^E \cdot 2000 = 0.25 \cdot 23$

$1.05^E = \frac{0.25 \cdot 23}{2000} \rightarrow$

$\boxed{E = \log_{1.05} \frac{0.25 \cdot 23}{2000}}$

4)  $P(x) = (x-1)^2(x-3)(x+1)$

a) 
$$\begin{array}{r|rrrrr} & 1 & -4 & 2 & 4 & -3 \\ 1 & & 1 & -3 & -1 & 3 \\ \hline & 1 & -3 & -1 & 3 & 0 \\ 3 & & 3 & 0 & -3 & \\ \hline & 1 & 0 & -1 & 0 & \end{array}$$

$(x+1)(x-1)$  rotable.  $\xrightarrow{\text{identidad}}$   
 $\xrightarrow{a^2-b^2}$

$Q(x) = 6(x+1)(x-\frac{2}{3})(x+\frac{1}{2})$   
 $(x+1)(3x-2)(2x+1)$

b) 
$$\begin{array}{r|rrrr} & 6 & 5 & -3 & -2 \\ -1 & & -6 & 1 & 2 \\ \hline & 6 & -1 & -2 & 0 \end{array}$$

$\frac{1 \pm \sqrt{1+48}}{12} = \frac{1 \pm 7}{12} \rightarrow \begin{cases} \frac{8}{12} = \frac{2}{3} \\ \frac{-6}{12} = -\frac{1}{2} \end{cases}$

c)  $P(x) = 4x^2 - x^4 = x^2(4 - x^2) = x(2+x)(2-x)$

5:

$$\frac{5x^4 + 3x^2 - 9x + 1}{x-3} = 5x^3 + 15x^2 + 48x + 135 + \frac{406}{x-3}$$

$$\begin{array}{r|rrrrr} & 5 & 0 & 3 & -9 & 1 \\ 3 & & 15 & 45 & 144 & 405 \\ \hline & 5 & 15 & 48 & 135 & 406 \end{array}$$

Labels: *resto* (above 406), *cociente* (below 5x^3, 15x^2, 48x, 135), *resto* (below 406)

6:

a) 
$$\frac{2x}{(x+2)(x-2)} + \frac{x}{x+2} + 3 - \frac{1}{x-2} = \frac{2x + x(x-2) + 3(x+2)(x-2) - (x+2)}{(x+2)(x-2)}$$

$$= \frac{2x + x^2 - 2x + 3x^2 - 12 - x - 2}{(x+2)(x-2)} = \frac{4x^2 - x - 14}{x^2 - 4}$$

b) 
$$\frac{x^2 - 4}{x^2 + x - 6} \cdot \frac{x^2 - 9}{x^2 - x - 6} = \frac{(x+2)(x-2)(x+3)(x-3)}{(x+3)(x-2)(x-3)(x+2)} = 1$$