



COLEGIO ALMA'S
bilingual school

APELLIDOS Y NOMBRE: Corrección Examen Evaluación
CURSO: 1º Bachillerato Nº 1ª Evaluación
FECHA: 12-12-2017 ASIGNATURA: Matemáticas

1) a) $\frac{-3\sqrt{2}}{\sqrt{5}-2} \frac{\sqrt{5}+2}{\sqrt{5}+2} = \frac{-3\sqrt{10}-6\sqrt{2}}{5-4} = \boxed{-3\sqrt{10}-6\sqrt{2}}$

b) $\frac{2+9\sqrt{2}}{5 \cdot \sqrt[3]{32}} \frac{\sqrt[3]{3}}{\sqrt[3]{3}} = \frac{2\sqrt[3]{3}+9\sqrt[6]{2^3 \cdot 3^2}}{15} = \boxed{\frac{2\sqrt[3]{3}+9\sqrt[6]{72}}{15}}$

2) a) $x^2+4x+4-2(x^2-2x+1)+x^2-9-1=0$
 $x^2+4x+4-2x^2+4x-2+x^2-9-1=0$
 $8x-8=0 \rightarrow \boxed{x=1}$

b) $x^3-9x^2+15x+25=0$

	1	-9	15	25
5		5	-20	-25
	1	-4	-5	0

$\rightarrow \boxed{x=5}$

$x = \frac{4 \pm \sqrt{16+20}}{2} = \frac{4 \pm 6}{2} \rightarrow \boxed{x=5}$
 $\rightarrow \boxed{x=-1}$

c) $81x^4-18x^2+1=0$

$(9x^2-1)^2=0 \rightarrow 9x^2-1=0 \rightarrow 9x^2=1 \rightarrow x^2=1/9 \rightarrow \boxed{x=\pm 1/3}$

d) mcm = $(x+2)(x-2)$

$6x+1 = (x+1)(x-2) + x(x+2)$

$6x+1 = x^2-x-2+x^2+2x$

$2x^2-5x-3=0$

$x = \frac{5 \pm \sqrt{25+24}}{4} = \frac{5 \pm 7}{4} \rightarrow \boxed{x=3}$
 $\rightarrow \boxed{x=-1/2}$

e) $(\sqrt{3x-2})^2 = (3-\sqrt{x-1})^2$

$3x-2 = 9-6\sqrt{x-1}+x-1$

$6\sqrt{x-1} = 10-2x$

$(3\sqrt{x-1})^2 = (5-x)^2$

$9(x-1) = 25-10x+x^2$

$9x-9 = 25-10x+x^2$

$x^2-19x+34=0$

$\rightarrow \boxed{x=7}$ No válida
 $\rightarrow \boxed{x=2}$



1) $3^x + 3^{-x} = 2$ $f = 3^x$ $3^x = 1 \rightarrow \boxed{x=0}$
 $f + \frac{1}{f} = 2$ $mcm = f$
 $f^2 + 1 = 2f \rightarrow f^2 - 2f + 1 = 0 \rightarrow (f-1)^2 = 0 \rightarrow f-1 = 0 \rightarrow f = 1$

2) $\frac{x+1}{x} = e \rightarrow x+1 = ex \rightarrow ex - x = 1 \rightarrow (e-1)x = 1$
 $\boxed{x = \frac{1}{e-1}}$

3) a) $xy + x^2 + y^2 = 7$
 $xy = 2 \rightarrow y = \frac{2}{x}$
 $2 + x^2 + \frac{4}{x^2} = 7$ $mcm = x^2$
 $2x^2 + x^4 + 4 = 7x^2$
 $x^4 - 5x^2 + 4 = 0$
 $x^2 = 1 \rightarrow \boxed{x=1} \rightarrow \boxed{y=2}$
 $ \rightarrow \boxed{x=-1} \rightarrow \boxed{y=-2}$
 $x^2 = 4 \rightarrow \boxed{x=2} \rightarrow \boxed{y=1}$
 $ \rightarrow \boxed{x=-2} \rightarrow \boxed{y=-1}$

4) $\left(\begin{array}{ccc|c} 2 & 2 & 1 & 4 \\ 1 & 3 & 1 & 0 \\ 5 & 1 & 1 & 12 \end{array} \right) \xrightarrow{2R_2 - R_1} \left(\begin{array}{ccc|c} 2 & 2 & 1 & 4 \\ 0 & 4 & 1 & -4 \\ 5 & 1 & 1 & 12 \end{array} \right) \xrightarrow{2R_3 - 5R_1} \left(\begin{array}{ccc|c} 2 & 2 & 1 & 4 \\ 0 & 4 & 1 & -4 \\ 0 & -8 & -3 & 4 \end{array} \right) \xrightarrow{R_3 + 2R_2} \left(\begin{array}{ccc|c} 2 & 2 & 1 & 4 \\ 0 & 4 & 1 & -4 \\ 0 & 0 & -1 & -4 \end{array} \right) \xrightarrow{2x=4} \boxed{x=2}$
 $\phantom{\left(\begin{array}{ccc|c} 2 & 2 & 1 & 4 \\ 0 & 4 & 1 & -4 \\ 0 & 0 & -1 & -4 \end{array} \right)} \xrightarrow{4y=-8} \boxed{y=-2}$
 $\phantom{\left(\begin{array}{ccc|c} 2 & 2 & 1 & 4 \\ 0 & 4 & 1 & -4 \\ 0 & 0 & -1 & -4 \end{array} \right)} \xrightarrow{SD} \boxed{z=4}$

5) a) $2+x-x^2 > 0$
 $x^2 - x - 2 = 0$
 $x = \frac{1 \pm \sqrt{1+8}}{2} = \frac{1 \pm 3}{2} \rightarrow \begin{cases} x=2 \\ x=-1 \end{cases}$

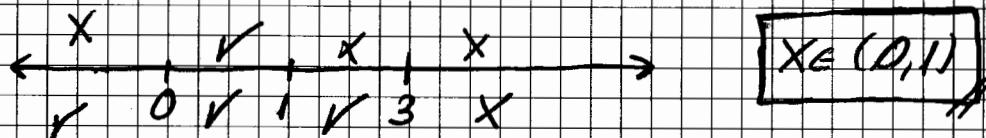
 $\boxed{x \in (-1, 2)}$

b) $\frac{x^3+x}{x+1} \leq 0$ $mcm = x+1 = 0 \rightarrow x = -1$
 $x^3 + x = 0$
 $x(x^2+1) = 0 \rightarrow x = 0$

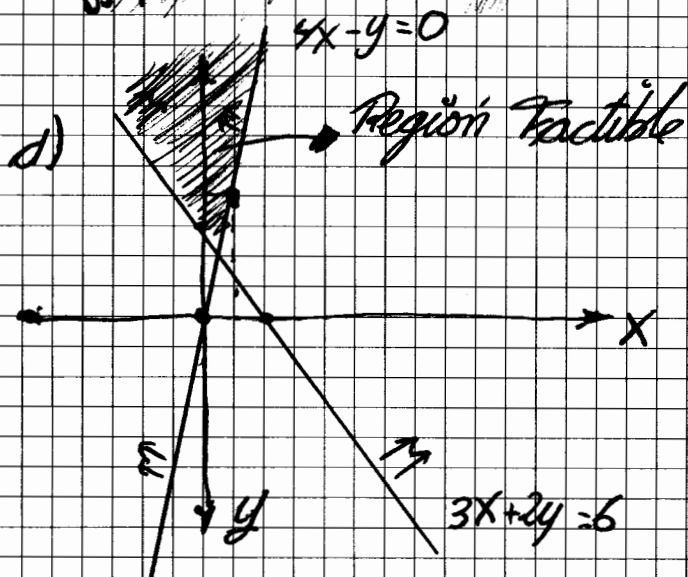
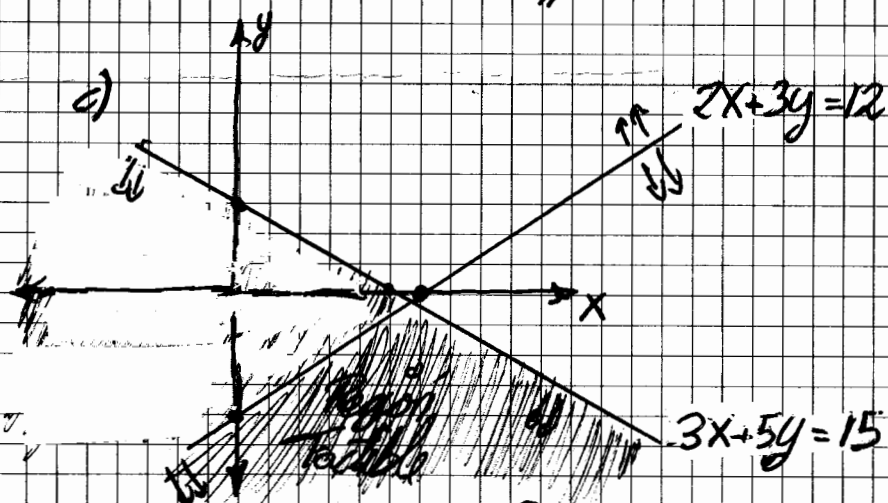
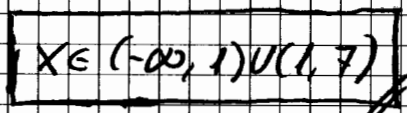
 $\boxed{x \in [-1, 0]}$



5) a)
$$\left. \begin{aligned} X - X^2 > 0 \\ 3X + 5 < 14 \end{aligned} \right\} \begin{aligned} X - X^2 = 0 &\rightarrow X(1-X) = 0 \rightarrow \begin{cases} X=0 \\ X=1 \end{cases} \\ 3X + 5 = 14 &\rightarrow 3X = 9 \rightarrow X=3 \end{aligned}$$



b)
$$\left. \begin{aligned} X + 2 < \frac{X^2 + 5}{2} \\ X - 1 < 6 \end{aligned} \right\} \begin{aligned} 2X + 4 = X^2 + 5 &\rightarrow X^2 - 2X + 1 = 0 \rightarrow X = 1 \\ X = 7 \end{aligned}$$





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CURSO: N°

FECHA: ASIGNATURA:

6. $G = 2500$
 $i = 6$

$G = 3546'30$
 $t = 6$

$$3546'30 = 2500 \left(1 + \frac{6}{100}\right)^t$$

$$t = \log_{1 + \frac{6}{100}} \frac{3546'30}{2500} \rightarrow \boxed{t = 6 \text{ años}}$$

7. $G = 6000 \text{ €}$
 $K = 4$
 $i = 4'25\%$
 $t = 5$

$$G = 6000 \cdot \left(1 + \frac{4'25}{100}\right)^{4 \cdot 5} = 7412'28$$

Los beneficios serán de $\boxed{7412'28 \text{ €}}$

8. $i = 5$
 $t = 10$
 $G = 6000$

$$6000 = G \left(1 + \frac{5}{100}\right)^{10} \rightarrow G = \frac{6000}{\left(1 + \frac{5}{100}\right)^{10}} = \boxed{3683'48 \text{ €}}$$

9. $TAE = \left[\left(1 + \frac{9}{100 \cdot 12}\right)^{12} - 1\right] \cdot 100 = \boxed{9'38\%}$

10. $A_p = 1000$
 $i = 5\%$
 $t = 30$
 $K = 1$

$$G = 1000 \cdot \left(1 + \frac{5}{100}\right)^{30} \frac{\left(1 + \frac{5}{100}\right)^{30} - 1}{\frac{5}{100}} = \boxed{69.760'79 \text{ €}}$$