COLEGIO ALMA'S
bilingual school

APELLIDOS Y NOMBRE: Corrección Recuperación
CURSO: 1º Bachillerato Nº 1ª Evaluación
FECHA: 10-01-2018 ASIGNATURA: Matemáticas

1.- a) $\frac{-3\sqrt[3]{2}}{\sqrt{5}-\sqrt{2}} \cdot \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}+\sqrt{2}} = \frac{-3\left(\sqrt[6]{2^2\cdot 5^3}+\sqrt[6]{2^2\cdot 2^3}\right)}{5-2} = \boxed{-\sqrt[6]{500}-\sqrt[6]{32}}$

b) $\frac{2}{5\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{2\sqrt{5}}{25}}$

2.- a) $3x^3+12x^2+3x-18=0$

	3	12	3	-18
1		3	15	18
	3	15	18	0

$\boxed{x=1}$

$x=\frac{-15\pm\sqrt{15^2-4\cdot 3\cdot 18}}{6}$

$x=\frac{-15\pm 3}{6} \rightarrow \boxed{x=-2}$, $\boxed{x=-3}$

b) $12x^2-73x^2+5x+6=0$

	12	-73	5	6
6		72	-6	-6
	12	-1	-1	0

$\boxed{x=6}$

$x=\frac{1\pm\sqrt{1+4\cdot 12\cdot 1}}{24}$

$x=\frac{1\pm 7}{24}$ → $\boxed{x=1/3}$, $\boxed{x=-1/4}$

c) $x^4+3x^2-4=0 \rightarrow x^2=\frac{-3\pm\sqrt{9+16}}{2}=\frac{-3\pm 5}{2}$

$x^2=-4$ #

$x^2=1 \rightarrow \boxed{x=\pm 1}$

d) $\frac{3x-3}{x-1}+\frac{x^2+2}{x+1}=\frac{7x+1}{(x+1)(x-1)}$ $\quad mcm=x^2-1$

$(3x-3)(x+1)+(x^2+2)(x-1)=7x+1$

$3x^2+3x-3x-3+x^3-x^2+2x-2=7x+1$

$x^3+2x^2-5x-6=0$

	1	2	-5	-6
-1		-1	-1	6
	1	1	-6	0

No válida

$x=\frac{-1\pm\sqrt{1+24}}{2}=\frac{-1\pm 5}{2}$ → $\boxed{x=2}$, $\boxed{x=-3}$ #

e) $\sqrt{2x+5}=3x-3$

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

$2x+5=9x^2-6x+9$

$9x^2-20x+4=0$

$x=\frac{20\pm\sqrt{400-4\cdot 4\cdot 9}}{18}=\frac{20\pm 16}{18}$ → $\boxed{x=2}$, $x=2/9$ #

f) $2\cdot 4^{x+1}+2^{x+2}=3/2$

$16y^2+8y-3=0$

$y=2^x$ $\quad mcm=2$

$y=\frac{-8\pm\sqrt{64+4\cdot 3\cdot 16}}{32}=\frac{-8\pm 16}{32}$

$y=\frac{1}{4}=2^x$ → $\boxed{x=-2}$ #

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g) $\log_2(x+1) - 2\log_2 x = 1 \quad \log_2 \frac{x+1}{x^2} = 1 \quad \frac{x+1}{x^2} = 2 \rightarrow 2x^2 - x - 1 = 0$

$x = \frac{1 \pm \sqrt{1+8}}{4} = \frac{1 \pm 3}{4} \begin{cases} \boxed{x=1} \\ x = -1/2 \ \# \end{cases}$

3) a) $\left.\begin{array}{l} x+y=4 \\ x^2+y^2=10 \end{array}\right\} \begin{array}{l} y = 4-x \\ x^2 + (4-x)^2 = 10 \\ x^2 + 16 - 8x + x^2 = 10 \end{array} \quad \begin{array}{l} 2x^2 - 8x + 6 = 0 \\ x^2 - 4x + 3 = 0 \\ x = \frac{4 \pm \sqrt{16-12}}{2} = \frac{4 \pm 2}{2} \end{array}$

$\boxed{x=3} \rightarrow y = 4-3 \rightarrow \boxed{y=1}$

$\boxed{x=1} \rightarrow y = 4-1 \rightarrow \boxed{y=3}$

b) $\left(\begin{array}{ccc|c} 2 & 3 & -1 & 2 \\ 1 & -1 & 1 & 5 \\ 1 & 1 & -3 & -1 \end{array}\right) \begin{array}{l} \\ 2F_2 - F_1 \\ 2F_3 - F_1 \end{array} \left(\begin{array}{ccc|c} 2 & 3 & -1 & 2 \\ 0 & -5 & 3 & 8 \\ 0 & -1 & -5 & -4 \end{array}\right) 5F_3 - F_2 \left(\begin{array}{ccc|c} 2 & 3 & -1 & 2 \\ 0 & -5 & 3 & 8 \\ 0 & 0 & -14 & -14 \end{array}\right)$

$2x - 3 - 1 = 2 \rightarrow \boxed{x=3}$

$-5y + 3 = 8 \rightarrow \boxed{y=-1}$

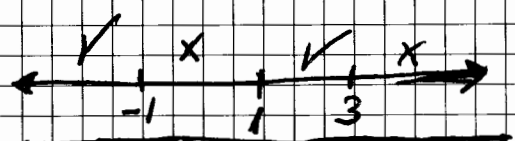
$\rightarrow SCD \rightarrow \boxed{z=1}$

4) $x^3 - 3x^2 - x + 3 \leq 0$

	1	-3	-1	3
3		3	0	-3
	1	0	-1	0

$\rightarrow x = 3$

$\rightarrow x = \pm 1$



$\boxed{x \in (-\infty, -1] \cup [1, 3]}$

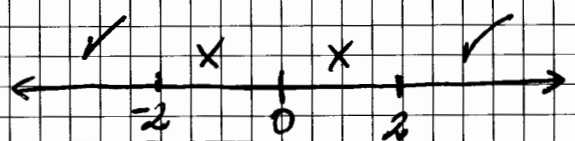
b) $x^2 - \frac{64}{x^2} > -12 \quad mcm = x^2 \neq 0 \rightarrow x \neq 0$

$x^4 - 64 = -12x^2$

$x^4 + 12x^2 - 64 = 0 \rightarrow x^2 = \frac{-12 \pm \sqrt{144 + 4 \cdot 64}}{2} = \frac{-12 \pm 20}{2}$

$x^2 = 4 \rightarrow x = \pm 2$

$x^2 = -16 \ \#$



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

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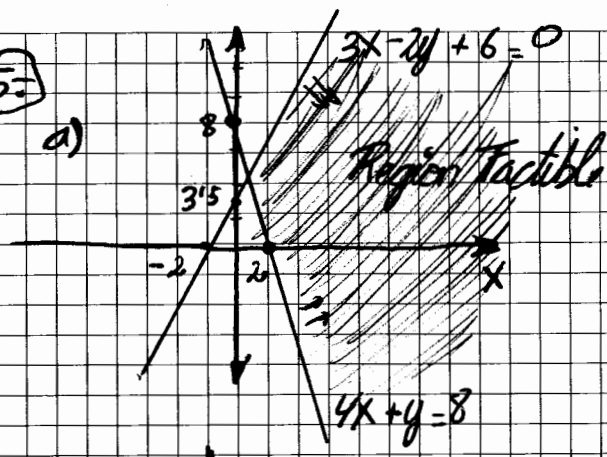
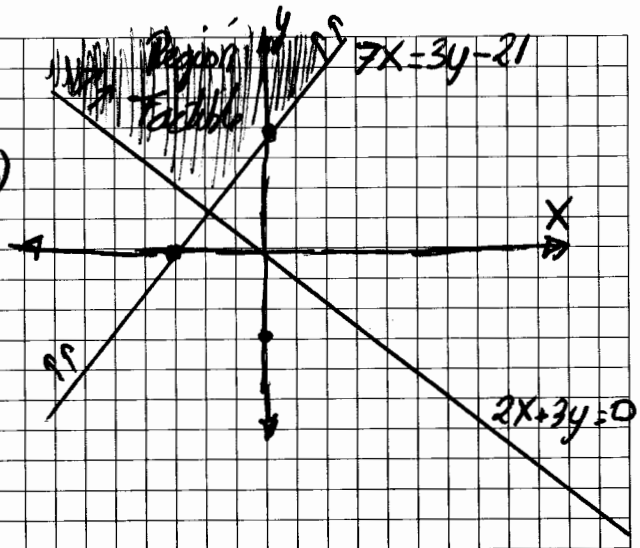
5.-

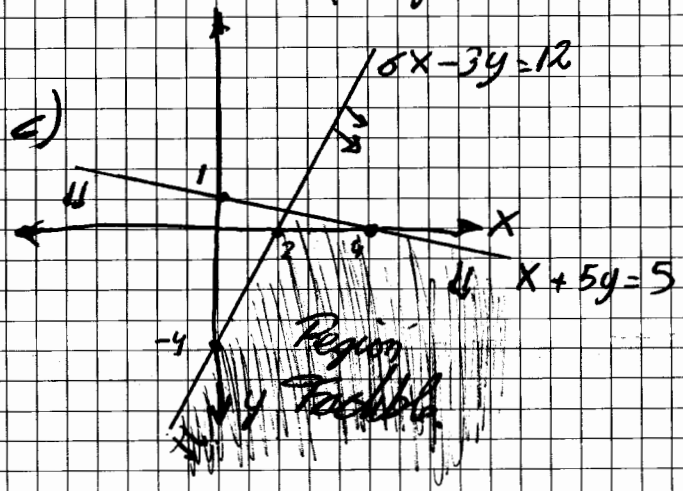
a)



b)



c)



6.- $TAE = \left[\left(1+\frac{10}{100\cdot 4}\right)^4 - 1\right]\cdot 100 = \boxed{10'38\%}$

7.- $C = 2500$, $t = 2'5$, $i = 6\%$, $K = 12$

$$C_f = 2500\left(1+\frac{6}{12\cdot 100}\right)^{12\cdot 2'5} = \boxed{2903'50\,€}$$

8.- $i = 6'2\%$, $t = 5$, $C_f = 8157'36€$

$$C = \frac{8157'36}{\left(1+\frac{6'2}{100}\right)^5} = \boxed{6038'47€}$$

9.- $A_p = 20000$

a) $\left(\frac{14}{1\cdot 100}\right)\frac{\left(1+\frac{14}{4\cdot 100}\right)^4}{\left(1+\frac{14}{1\cdot 100}\right)^4 - 1} = \boxed{6864'10€}$

b) $\left(\frac{14}{12\cdot 100}\right)\frac{\left(1+\frac{14}{12\cdot 100}\right)^{12\cdot 4}}{\left(1+\frac{14}{12\cdot 100}\right)^{12\cdot 4} - 1} = \boxed{546'53€}$