SOLUCIÓN EXAMEN UNIDADES 7 Y 8. ECUACIONES Y SISTEMAS (3º ESO APLIC.)

Halla todas las soluciones de las ecuaciones:

1) $\frac{x-3}{2} - \frac{5x+1}{3} = \frac{1-9x}{6}$

$\frac{6x-18}{12} - \frac{20x+4}{12} = \frac{2-18x}{12}$; $6x-18-20x-4 = 2-18x$;

$6x-20x+18x = 2+18+4$; $4x = 24$; $x = \frac{24}{4}$; $x = 6$

2) $x^2+x+2 = 0$; $x = \frac{-1 \pm \sqrt{1-4\cdot 2\cdot 1}}{2} = \frac{-1 \pm \sqrt{-7}}{2}$ (no hay solución real)

3) $2x^2+5x = 0$; $x(2x+5) = 0$ $\begin{cases} x = 0 \\ 2x+5 = 0 ; \ 2x = -5 ; \ x = -\frac{5}{2} \end{cases}$

4) $2x^2-8 = 0$; $x^2-4 = 0$; $x^2 = 4$; $x = \pm 2$

5) $-2x^2-x+3 = 0$; $x = \frac{1 \pm \sqrt{1-4(-2)\cdot 3}}{2(-2)} = \frac{1 \pm \sqrt{25}}{-4} = \frac{1 \pm 5}{-4} = \begin{cases} -\frac{3}{2} \\ 1 \end{cases}$

6) $100x^2-25 = 0$; $4x^2-1 = 0$; $4x^2 = 1$; $x^2 = \frac{1}{4}$; $x = \pm\sqrt{\frac{1}{4}} = \pm\frac{1}{2}$

7) 4 tazas + 7 porras = 7,15
3 tazas + 2 porras = 4,55
} precio taza → x, precio porra → y

$\left.\begin{array}{l} 4x+7y = 7{,}15 \\ 3x+2y = 4{,}55 \end{array}\right\}$ $\begin{array}{l} 12x+21y = 21{,}45 \\ 12x+8y = 18{,}20 \end{array}$ RESTA

$13y = 3{,}25$; $y = \frac{3{,}25}{13} = 0{,}25$ € la porra

Así: $3x+2\cdot(0{,}25) = 4{,}55$

$3x+0{,}5 = 4{,}55$; $3x = 4{,}05$; $x = \frac{4{,}05}{3} = 1{,}35$ € la taza

Resuelve los sistemas:

8) $\left.\begin{array}{l} 5x-3y=1 \\ 4x+2y=14 \end{array}\right\} \begin{array}{l} 20x-12y=4 \\ 20x+10y=70 \end{array}$ RESTA

$-22y=-66$; $y=\frac{-66}{-22}$; $y=3$

Así, $4x+2\cdot 3=14$; $4x=14-6$; $x=\frac{8}{4}$; $x=2$

9) $\left.\begin{array}{l} 3(x+2)=y+7 \\ x+2(y+1)=0 \end{array}\right\} \begin{array}{l} 3x+6-y=7 \\ x+2y+2=0 \end{array} \left\{\begin{array}{l} 3x-y=1 \\ x+2y=-2 \end{array}\right\} \rightarrow x=-2-2y$

Sustituyendo arriba: $3(-2-2y)-y=1$

$-6-6y-y=1$; $-7y=7$; $y=-1$

Así: $x+2((-1)+1)=0$; $x+2\cdot 0=0$; $x=0$

10) $\left.\begin{array}{l} 2x-y=4 \\ 4x+3y=-7 \end{array}\right\} \rightarrow y=2x-4$

sustituyendo: $4x+3(2x-4)=-7$

$4x+6x-12=-7$; $10x=12-7$; $x=\frac{5}{10}$; $x=\frac{1}{2}$

Así: $y=2\left(\frac{1}{2}\right)-4=1-4$; $y=-3$