

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

Halla todas las soluciones de las ecuaciones:

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

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

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

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

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

$$4) 2x^2-8=0; \quad x^2-4=0; \quad x^2=4; \quad x = \underline{\underline{\pm 2}}$$

$$5) -2x^2-x+3=0; \quad x = \frac{1 \pm \sqrt{1-4(-2) \cdot 3}}{2(-2)} = \frac{1 \pm \sqrt{25}}{-4} = \frac{1 \pm 5}{-4} = \underline{\underline{\frac{3}{2}, -1}}$$

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

$$7) \begin{cases} 4 \text{ tazas} + 7 \text{ porras} = 7,15 \\ 3 \text{ tazas} + 2 \text{ porras} = 4,55 \end{cases} \quad \begin{cases} \text{precio taza} = x \\ \text{precio porra} = y \end{cases}$$

$$\begin{cases} 4x+7y = 7,15 \\ 3x+2y = 4,55 \end{cases} \quad \begin{cases} 12x+21y = 21,45 \\ 12x+8y = 13,65 \end{cases} \quad \text{RESTA}$$

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

$$\text{Así: } 3x + 2 \cdot (0,25) = 4,55$$

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

Resuelve los sistemas:

$$\begin{array}{l} 8) \quad \left. \begin{array}{l} 5x - 3y = 1 \\ 4x + 2y = 14 \end{array} \right\} \begin{array}{l} 20x - 12y = 4 \\ 20x + 10y = 70 \end{array} \quad \text{RESTA} \\ \hline -22y = -66; \quad y = \frac{-66}{-22}; \quad \underline{\underline{y = 3}} \\ \text{Así, } 4x + 2 \cdot 3 = 14; \quad 4x = 14 - 6; \quad x = \frac{8}{4}; \quad \underline{\underline{x = 2}} \end{array}$$

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

Substituyendo arriba: $3(-2-2y) - y = 1$
 $-6 - 6y - y = 1; \quad -7y = 7; \quad \underline{\underline{y = -1}}$

Así: $x + 2((-1) + 1) = 0; \quad x + 2 \cdot 0 = 0; \quad \underline{\underline{x = 0}}$

$$\begin{array}{l} 10) \quad \left. \begin{array}{l} 2x - y = 4 \\ 4x + 3y = -7 \end{array} \right\} \begin{array}{l} y = 2x - 4 \\ \text{substituyendo: } 4x + 3(2x - 4) = -7 \end{array} \end{array}$$

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

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