

Tarea: 4 d, f

4d)

$$x(x-5) + x^2 = (3x-1)(x-1)$$

$$x^2 - 5x + x^2 = 3x^2 - 3x - x + 1$$

$$2x^2 - 5x = 3x^2 - 4x + 1$$

$$3x^2 - 4x + 1 - 2x^2 + 5x = 0$$

$$x^2 + x + 1 = 0 \begin{cases} a = 1 \\ b = 1 \\ c = 1 \end{cases}$$

$$\begin{array}{r} 3x \quad -1 \\ * \quad x \quad -1 \\ \hline -3x \quad +1 \\ 3x^2 \quad -x \\ \hline 3x^2 \quad -4x \quad 1 \end{array}$$

$$x = \frac{-1 \pm \sqrt{1^2 - 4 \cdot 1 \cdot 1}}{2 \cdot 1} = \frac{-1 \pm \sqrt{-3}}{2} \text{ sin soluciones}$$

La ecuación no tiene soluciones.

$$4f) 15 - (x+2)^2 = (x-3)^2 + 2x$$

$$15 - (x^2 + 4x + 4) = (x^2 - 6x + 9) + 2x$$

$$15 - x^2 - 4x - 4 = x^2 - 6x + 9 + 2x$$

$$-x^2 - 4x + 11 = x^2 - 4x + 9; \quad -x^2 - 4x + 11 - x^2 + 4x - 9 = 0$$

$$-2x^2 + 2 = 0 \begin{cases} a = -2 \\ b = 0 \\ c = 2 \end{cases}$$

$$x = \frac{-0 \pm \sqrt{0^2 - 4 \cdot (-2) \cdot 2}}{2 \cdot (-2)} = \frac{0 \pm 4}{-4} = \begin{cases} x_1 = \frac{+4}{-4} = -1 \\ x_2 = \frac{-4}{-4} = 1 \end{cases}$$

Soluciones: $x_1 = -1$ y $x_2 = 1$

$$\begin{array}{r}
 x \quad +2 \\
 * \quad x \quad +2 \\
 \hline
 +2x \quad +4 \\
 x^2 \quad +2x \\
 \hline
 x^2 \quad +4x \quad +4
 \end{array}$$

$$\begin{array}{r}
 x \quad -3 \\
 * \quad x \quad -3 \\
 \hline
 -3x \quad +9 \\
 x^2 \quad -3x \\
 \hline
 x^2 \quad -6x \quad +9
 \end{array}$$

5a)

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

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

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

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

$$x^2 + 4x - 1 = 6; \quad x^2 + 4x - 1 - 6 = 0$$

$$x^2 + 4x - 7 = 0 \quad \begin{cases} a = 1 \\ b = 4 \\ c = -7 \end{cases}$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4 \cdot 1 \cdot (-7)}}{2 \cdot 1} = \frac{-4 \pm 2\sqrt{11}}{2} = \begin{cases} x_1 = \frac{-4 + 2\sqrt{11}}{2} = -2 + \sqrt{11} \\ x_2 = \frac{-4 - 2\sqrt{11}}{2} = -2 - \sqrt{11} \end{cases}$$

Soluciones : $x_1 = -2 + \sqrt{11}$ y $x_2 = -2 - \sqrt{11}$

$$\begin{array}{r}
 x \quad -1 \\
 * \quad x \quad -1 \\
 \hline
 -x \quad +1 \\
 x^2 \quad -x \\
 \hline
 x^2 \quad -2x \quad +1
 \end{array}$$

5e)

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

$$\text{mín.cm.}(5,2) = 10$$

$$\frac{2 \cdot 2(x+3)(x-3) + 5 \cdot x}{10} = \frac{5 \cdot x(x-2)}{10}$$

$$\begin{array}{r} x \quad +3 \\ * \quad x \quad -3 \\ \hline -3x \quad -9 \\ x^2 \quad +3x \\ \hline x^2 \quad \quad -9 \end{array}$$

$$4(x^2 - 9) + 5x = 5x^2 - 10x; \quad 4x^2 - 36 + 5x = 5x^2 - 10x$$

$$4x^2 - 36 + 5x - 5x^2 + 10x = 0; \quad -x^2 + 15x - 36 = 0 \quad \begin{cases} a = -1 \\ b = 15 \\ c = -36 \end{cases}$$

$$x = \frac{-15 \pm \sqrt{15^2 - 4 \cdot (-1) \cdot (-36)}}{2 \cdot (-1)} = \frac{-15 \pm 9}{-2} = \begin{cases} x_1 = \frac{-15 + 9}{-2} = 3 \\ x_2 = \frac{-15 - 9}{-2} = 12 \end{cases}$$

$$\text{Soluciones: } x_1 = 3 \quad \text{y} \quad x_2 = 12$$

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