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

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

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

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

$$-4x = 0$$

$$x = \frac{0}{-4} = 0 \quad \text{Solución: } x = 0$$

$$c) \frac{x+3}{5} + \frac{(x-1)^2}{4} = \frac{x^2+1}{4}$$

$$\text{mín.c.m.}\{5,4\} = 20$$

$$\frac{4(x+3) + 5(x-1)^2}{20} = \frac{5(x^2+1)}{20}; \quad 4x+12+5(x^2-2x+1) = 5x^2+5; \quad 4x+12+5x^2-10x+5 = 5x^2+5$$

$$5x^2-6x+17 = 5x^2+5; \quad 5x^2-6x+17-5x^2-5=0; \quad -6x+12=0; \quad -6x=-12; \quad x = \frac{-12}{-6} = 2$$

$$\text{Solución: } x = 2$$

9 c

$$2x^2 + 5x = 0 \begin{cases} a = 2 \\ b = 5 \\ c = 0 \end{cases} \quad x = \frac{-5 \pm \sqrt{5^2 - 4 \cdot 2 \cdot 0}}{2 \cdot 2} = \frac{-5 \pm 5}{4} = \begin{cases} x_1 = \frac{-5 + 5}{4} = 0 \\ x_2 = \frac{-5 - 5}{4} = \frac{-5}{2} \end{cases}$$

Soluciones: $x_1 = 0$ y $x_2 = \frac{-5}{2}$

11)

a) $(x-3)(x+3) + (x-4)(x+4) = 25$

x	-3	x	-4
*	x	*	x
$+3x$	-9	$+4x$	-16
x^2	$-3x$	x^2	$-4x$
x^2	-9	x^2	-16

$$x^2 - 9 + x^2 - 16 = 25; \quad 2x^2 - 25 = 25; \quad 2x^2 - 25 - 25 = 0; \quad 2x^2 - 50 = 0 \quad \begin{cases} a = 2 \\ b = 0 \\ c = -50 \end{cases}$$

$$x = \frac{-0 \pm \sqrt{0^2 - 4 \cdot 2 \cdot (-50)}}{2 \cdot 2} = \frac{\pm 20}{4} = \begin{cases} x_1 = \frac{20}{4} = 5 \\ x_2 = \frac{-20}{4} = -5 \end{cases}$$

Soluciones: $x_1 = 5$ y $x_2 = -5$

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a) $(2x-3)^2 - 19 = 3x(x-5)$

$$\begin{array}{r} 2x \quad -3 \\ * \quad 2x \quad -3 \\ \hline -6x \quad +9 \\ 4x^2 \quad -6x \\ \hline 4x^2 \quad -12x \quad +9 \end{array}$$

$4x^2 - 12x + 9 - 19 = 3x^2 - 15x; \quad 4x^2 - 12x - 10 = 3x^2 - 15x; \quad 4x^2 - 12x - 10 - 3x^2 + 15x = 0;$

$$x^2 + 3x - 10 = 0 \begin{cases} a = 1 \\ b = 3 \\ c = -10 \end{cases} \quad x = \frac{-3 \pm \sqrt{3^2 - 4 \cdot 1 \cdot (-10)}}{2 \cdot 1} = \frac{-3 \pm 7}{2} = \begin{cases} x_1 = \frac{-3+7}{2} = 2 \\ x_2 = \frac{-3-7}{2} = -5 \end{cases}$$

Soluciones: $x_1 = 2$ y $x_2 = -5$

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a) $(2x-5)(x+7) = 0 \begin{cases} 2x-5=0; & 2x=5; & x=\frac{5}{2} \\ x+7=0; & x=-7 \end{cases}$

Soluciones: $x = \frac{5}{2}$ y $x = -7$

d) $(3x+1)(x^2+x-2) = 0 \begin{cases} 3x+1=0; & 3x=-1; & x=\frac{-1}{3} \\ x^2+x-2=0 \end{cases}$

$$x^2 + x - 2 = 0 \begin{cases} a = 1 \\ b = 1 \\ c = -2 \end{cases} \quad x = \frac{-1 \pm \sqrt{1^2 - 4 \cdot 1 \cdot (-2)}}{2 \cdot 1} = \frac{-1 \pm 3}{2} = \begin{cases} x_1 = \frac{-1+3}{2} = 1 \\ x_2 = \frac{-1-3}{2} = -2 \end{cases}$$

Soluciones: $x_1 = 1, \quad x_2 = -2$ y $x_3 = \frac{-1}{3}$

16 a y 17b