

$$\textcircled{10} \quad a) \sqrt{4x+5} = x+2$$

$$4x+5 = x^2 + 4x + 4$$

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

$$0 = x^2 - 1$$

$$x = \pm 1$$

$$\boxed{x=1} \quad 3=3.$$

$$\boxed{x=-1} \quad \sqrt{4(-1)+5} = \sqrt{1} = 1 \\ -1+2 = 1 = 1$$

$$b) \sqrt{x+2} = x$$

$$\sqrt{x} = x-2$$

$$x = (x-2)^2$$

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

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

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

$$x = \frac{5 \pm \sqrt{25 - 16}}{2} = \frac{5 \pm \sqrt{9}}{2} = \frac{5 \pm 3}{2}$$

4
1

$$\sqrt{x} + 2 = x$$

$$x = 4; \sqrt{4} + 2 = 4$$

$$x = 1; \sqrt{1} + 2 = 3 \neq 1$$

Solucior = $x = 4$

$$c) (\sqrt{x} - x + 2)(\sqrt{x} - 3)(\sqrt{x} + 3) = 0$$

① $\sqrt{x} - x + 2 = 0$

② $\sqrt{x} - 3 = 0$

③ $\sqrt{x} + 3 = 0$

1) $\sqrt{x} = x - 2; (\sqrt{x})^2 = (x - 2)^2$

$$x = x^2 - 4x + 4; 0 = x^2 - 4x - x + 4$$

$$x^2 - 5x + 4 = 0 \quad \begin{array}{l} \rightarrow 1 \\ \bullet 4 \end{array}$$

$$x = 1; \sqrt{1} = 1 - 2$$

$$x = 4; \sqrt{4} = 4 - 2; \boxed{x = 4}$$

$$2) \sqrt{x} - 3 = 0; \sqrt{x} = 3; (\sqrt{x})^2 = 3^2$$

$$\boxed{x = 9}; \sqrt{9} - 3 = 0$$

$$3) \sqrt{x} + 3 = 0; \sqrt{x} = -3; (\sqrt{x})^2 = -3^2$$

$$x = 9; \sqrt{9} + 3 = 6 \neq 0$$

Las dos soluciones son $\begin{cases} x = 4 \\ x = 9 \end{cases}$

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$$a) \frac{x+7}{x+3} + \frac{x^2-3x+6}{x^2+2x-3} = 1$$

$$x+3 \quad | \quad \boxed{\text{M.C.M.} = (x-1)(x+3)}$$

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

$$\frac{(x-1)(x+7)}{(x-1)(x+3)} + \frac{x^2 - 3x + 6}{(x-1)(x+3)} = \frac{(x-1)(x+3)}{(x-1)(x+3)}$$

$$x^2 + 7x - x - 7 + x^2 - 3x + 6 = x^2 + 3x - x - 3$$

$$2x^2 + 3x - 1 = x^2 + 2x - 3; 2x^2 + 3x - 1 - x^2 - 2x + 3 = 0$$

$$x^2 + x + 2 = 0; \boxed{\text{No tiene solución}}$$

$$b) \frac{x+1}{x^2-2x} + \frac{x-1}{x} = 2;$$

$$\text{m.c.m.} = x(x-2) \quad ; \quad \frac{x+1}{x(x-2)} + \frac{(x-1)(x-2)}{x(x-2)} \cdot \frac{2x(x-2)}{x(x-2)}$$

$$x^2 - 2x = x(x-2)$$

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

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

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

$$x^2 - 2x - 3 = 0$$

$$x = \frac{2 \pm \sqrt{4+12}}{2} =$$

$$x = \frac{2 \pm 4}{2} \begin{cases} 3 \\ -1 \end{cases}$$

Las 2 soluciones son validas porque ninguna anula los denominadores.

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$$x^4 - 10x^3 + 5x^2 + 40x - 36 = 0$$

	1	-10	+5	+40	-36
1	1	-9	-4	36	
	1	-9	-4	36	0
2	2	-14	-36		
	1	-7	-18	0	

$$x^4 - 10x^3 + 5x^2 + 40x - 36 = (x-1)(x-2)(x^2 - 7x - 18)$$

$$(x-1)(x-2)(x^2-7x-18)=0$$

$$x-1=0 \quad \boxed{x=1}$$

$$x-2=0 \quad \boxed{x=2}$$

$$x^2-7x-18=0 \quad \begin{cases} +9 \\ -2 \end{cases} \quad \begin{cases} \boxed{x=9} \\ \boxed{x=-2} \end{cases}$$