

## HOJA EXTRA 2 EVALUACIÓN.SOLUCIÓN

1. Simplifica las siguientes fracciones algebraicas: ( 2,5 puntos)

$$a) \frac{x^2 + 2x + 1}{(x + 1)^2} = \boxed{1}$$

$$c) \frac{2x^2 - 4}{x + 2} = \boxed{\frac{2(x^2 - 2)}{x + 2}}$$

$$b) \frac{2x^2 + 2x}{x + 1} = \frac{2x(x + 1)}{x + 1} = \boxed{2x}$$

$$d) \frac{8x^4 - 4x^2}{(2x + 1)^2} = \boxed{\frac{4x^2(2x^2 - 1)}{(2x + 1)^2}}$$

2. Desarrolla los siguientes productos notables:(1,5 puntos)

$$a) (4x^2 + 2)^2 = \boxed{16x^4 + 16x^2 + 4}$$

$$b) \left(\frac{x}{2} - 4\right)^2 = \boxed{\frac{x^2}{4} - 4x + 16}$$

$$c) \left(x^2 + \frac{1}{2}\right) \cdot \left(x^2 - \frac{1}{2}\right) = \boxed{x^4 - \frac{1}{4}}$$

3. Resuelve las siguientes ecuaciones : ( 2 puntos)

$$a) \frac{4x}{2} + 3 + \frac{5x}{3} = 2 \quad ; \quad \frac{12x + 18 + 10x}{6} = \frac{12}{6} \quad ; 22x = 12 - 18; 22x = -6; \boxed{x = \frac{-6}{22} = \frac{-3}{11}}$$

$$b) 2x^2 + 5x + 2 = 0 \quad x = \frac{-5 \pm \sqrt{25 - 4 \cdot 4}}{4} = \frac{-5 \pm \sqrt{9}}{4} = \frac{-5 \pm 3}{4} \quad \boxed{X_1 = \frac{-1}{2}; X_2 = -2}$$

$$c) \frac{2(x^2 + 4)}{3} + 3x + \frac{x^2}{3} = 0 \quad ; \quad \frac{2x^2 + 8}{3} + \frac{9x}{3} + \frac{x^2}{3} = 0; 3x^2 + 9x + 8 = 0 \quad x = \frac{-9 \pm \sqrt{81 - 96}}{6} \quad \boxed{S.S.}$$

$$d) 4(x + 1)^2 + 5x + 1 = 0 \quad ; 4(x^2 + 2x + 1) + 5x + 1 = 0 \quad ; 4x^2 + 8x + 4 + 5x + 1 = 0$$

$$4x^2 + 13x + 5 = 0 \quad x = \frac{-13 \pm \sqrt{169 - 80}}{8} = \frac{-13 \pm \sqrt{89}}{8} \quad \boxed{x_1 = \frac{-13 + \sqrt{89}}{8}; x_2 = \frac{-13 - \sqrt{89}}{8}}$$

4. Resuelve los siguientes sistemas de ecuaciones : (4 puntos)

$$a) \begin{cases} 2x + y = 4 \rightarrow y = 4 - 2x \\ 4x + 2y = 6 \end{cases} \quad \text{Substitución}$$

$$4x + 2(4 - 2x) = 6$$

$$4x + 8 - 4x = 6$$

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

$$b) \begin{cases} \frac{2x}{3} + 2y = 3 \quad \frac{2x}{3} + \frac{6y}{3} = \frac{9}{3} \Rightarrow 2x + 6y = 9 \\ x + 4y = 8 \Rightarrow x = 8 - 4y \end{cases}$$

$$8 - 4y = \frac{9 - 6y}{2} \quad \text{Igualación}$$

$$16 - 8y = 9 - 6y \Rightarrow -2y = -7 \Rightarrow \boxed{y = \frac{7}{2}}$$

$$\boxed{x = 8 - \frac{28}{2} = \frac{12}{2} = -6}$$

$$c) \begin{cases} \frac{3x}{4} - 5y = 1 \\ x + y = 2 \Rightarrow x = 2 - y \end{cases}$$

$$\frac{3(2 - y)}{4} - 5y = 1 \Rightarrow \frac{6 - 3y}{4} - \frac{20y}{4} = \frac{4}{4}$$

$$\Rightarrow -23y = -2 \Rightarrow \boxed{y = \frac{2}{23}} \quad \boxed{x = 2 - \frac{2}{23} = \frac{44}{23}}$$

$$d) \begin{cases} 3(x + y) + 2x = 1 \quad \textcircled{1} \\ x + 3y = 0 \end{cases}$$

$$3x + 3y + 2x = 1$$

$$5x + 3y = 1 \quad \textcircled{1}$$

$$\rightarrow x = -3y \quad \text{Sustituyo en } \textcircled{1}$$

$$-15y + 3y = 1 \Rightarrow -12y = 1$$

$$\boxed{y = -\frac{1}{12}} \Rightarrow \boxed{x = \frac{3}{12} = \frac{1}{4}}$$