

Pag 59-Ej.57a	$x(x+3) - 2(x^2 - 4) - 8 = 0$ Operamos: $-x^2 + 3x = 0$ Es una ecuación incompleta cuyas soluciones son $x_1 = 0$ y $x_2 = 3$.
Pag 59-Ej.55b	$\frac{2-x}{2} + \frac{3x^2-2x}{3} + \frac{19x}{6} = 0 \rightarrow \frac{6-3x}{6} + \frac{6x^2-4x}{6} + \frac{19x}{6} = 0 \rightarrow x^2 + 2x + 1 = 0$ $x = \frac{-2 \pm \sqrt{2^2 - 4 \cdot 1 \cdot 1}}{2 \cdot 1} \rightarrow x = -1$
Pag 59-Ej.59	a) $k^2 - 4 \cdot 1 \cdot 25 = 0 \rightarrow k = 10$ b) $(-4)^2 - 4 \cdot 1 \cdot k < 0 \rightarrow (4, 8)$ c) $8^2 - 4 \cdot k \cdot 5 > 0 \rightarrow \left(-\infty, \frac{16}{5}\right)$
Pag 59-Ej.65	b) $\frac{3}{x+2} - \frac{5-x}{x+1} = 0 \rightarrow 3x+3+x^2-3x-10=0 \rightarrow x^2-7=0$ $x_1 = -\sqrt{7} \quad x_2 = \sqrt{7}$ c) $\frac{-x+3}{x-1} - \frac{9-x}{x^2-1} = 0 \rightarrow -x^2+2x+3-9+x=0 \rightarrow x^2-3x+6=0$ $x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4 \cdot 1 \cdot 6}}{2 \cdot 1} = \frac{3 \pm \sqrt{-15}}{2}$ No tiene solución real. d) $\frac{x}{x^2-4} + \frac{x-1}{x+2} - \frac{3}{x-2} = 2 \rightarrow x+x^2-3x+2-3x+6-2x^2+8$ $\rightarrow 3x^2-5x-12=0$ $x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 3 \cdot (-12)}}{2 \cdot 3} = \frac{5 \pm 13}{6} \rightarrow \begin{cases} x_1 = 3 \\ x_2 = -\frac{4}{3} \end{cases}$ e) $\frac{x+4}{x-3} - \frac{1-2x}{x^2-x-6} = 0 \rightarrow x^2+6x+8-1+2x=0 \rightarrow x^2+8x+7=0$ $x = \frac{-8 \pm \sqrt{8^2 - 4 \cdot 1 \cdot 7}}{2 \cdot 1} = \frac{-8 \pm 6}{2} \rightarrow \begin{cases} x_1 = -1 \\ x_2 = -7 \end{cases}$

Pag 59-Ej. 66	<p>a) $8x^4 + 26x^2 + 15 = 0 \xrightarrow{z=x^2} 8z^2 + 26z + 15 = 0$</p> $z = \frac{-26 \pm \sqrt{26^2 - 4 \cdot 8 \cdot 15}}{2 \cdot 8} = \frac{-26 \pm 14}{16} \rightarrow \begin{cases} z_1 = -\frac{3}{4} \\ z_2 = -\frac{5}{2} \end{cases}$ <p>No tiene solución real.</p> <p>b) $9x^4 + 80x^2 - 9 = 0 \xrightarrow{z=x^2} 9z^2 + 80z - 9 = 0$</p> $z = \frac{-80 \pm \sqrt{80^2 - 4 \cdot 9 \cdot (-9)}}{2 \cdot 9} = \frac{-80 \pm 82}{18} \rightarrow \begin{cases} z_1 = \frac{1}{9} \\ z_2 = -9 \end{cases}$ <p>$z_1 = \frac{1}{9} \rightarrow x_1 = -\frac{1}{3} \quad x_2 = \frac{1}{3}$</p> <p>$z_2 = -9 \rightarrow$ No tiene solución real.</p> <p>c) $6 - \frac{5}{x^2} + \frac{2}{x^4} = 0 \rightarrow 6x^4 - 5x^2 + 2 = 0 \xrightarrow{z=x^2} 6z^2 - 5z + 2 = 0$</p> $z = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 6 \cdot 2}}{2 \cdot 6} = \frac{5 \pm \sqrt{-23}}{12}$ <p>No tiene solución real.</p> <p>d) $9(1-x^2)(1+x^2) + 80x^2 = 0 \rightarrow -9x^4 + 80x^2 + 9 = 0 \xrightarrow{z=x^2} -9z^2 + 80z + 9 = 0$</p> $z = \frac{-80 \pm \sqrt{80^2 - 4 \cdot (-9) \cdot 9}}{2 \cdot (-9)} = \frac{-80 \pm 82}{-18} \rightarrow \begin{cases} z_1 = 9 \\ z_2 = -\frac{1}{9} \end{cases}$ <p>$z_1 = 9 \rightarrow x_1 = -3 \quad x_2 = 3$</p> <p>$z_2 = -\frac{1}{9} \rightarrow$ No tiene solución real.</p>
Pag 59 - Ej. 61	<p>a) $2 \cdot \left(\frac{3}{2}\right)^2 + 5 \cdot \frac{3}{2} + k = 0 \rightarrow k = -12$</p> <p>b) $k[(-2)^2 - 5 \cdot (-2) + 1] - 6 \cdot ((-2) + 2) + 4 \cdot (k - (-2)) - 65 = 0 \rightarrow k = 3$</p>
Pág. 60 - Ej 69	<p>b) $2\sqrt{3x+1} - 2x + 2 = 0 \rightarrow 4x^2 - 20x = 0$</p> <p>$x = 5 \rightarrow 2\sqrt{3 \cdot 5 + 1} - 2 \cdot 5 + 2 = 2 \cdot 4 - 10 + 2 = 0$</p> <p>$x = 0 \rightarrow 2\sqrt{3 \cdot 0 + 1} - 2 \cdot 0 + 2 = 2 \cdot 1 + 2 \neq 0$</p> <p>c) $\frac{\sqrt{2x-2}}{x-5} = 1 \rightarrow x^2 - 12x + 27 = 0$</p> $x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4 \cdot 1 \cdot 27}}{2 \cdot 1} = \frac{12 \pm 6}{2} \rightarrow \begin{cases} x_1 = 9 \\ x_2 = 3 \end{cases}$ <p>$x = 9 \rightarrow \frac{\sqrt{2 \cdot 9 - 2}}{9 - 5} = \frac{4}{4} = 1$</p> <p>$x = 3 \rightarrow \frac{\sqrt{2 \cdot 3 - 2}}{3 - 5} = \frac{2}{-2} \neq 1$</p> <p>d) $\sqrt{x+2} - \sqrt{x-6} - 2 = 0 \rightarrow x+2 = x-6 + 4\sqrt{x-6} + 4 \rightarrow 1 = x-6$</p> <p>$x = 7 \rightarrow \sqrt{7+2} - \sqrt{7-6} - 2 = 3 - 1 - 2 = 0$</p>
Pág 60 - 79	$\frac{6}{-9} = \frac{-4}{a}$ <p>$6a = 36 \rightarrow a = 6$</p> <p>a) No es posible. b) $a = 6$ c) $a \neq 6$</p>

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- a) $-x + 15 \leq 3 - 7x \rightarrow 6x \leq -12 \rightarrow x \leq 2$
 $(-\infty, -2]$
- b) $x + 11 \geq 3 - 4x \rightarrow 5x \geq -8 \rightarrow x \geq -\frac{8}{5}$
 $\left[-\frac{8}{5}, +\infty\right)$
- c) $-x - 13 \leq 3 + 7x \rightarrow -16 \leq 8x \rightarrow -2 \leq x$
 $[-2, +\infty)$
- d) $2x + 11 \geq 6 + 5x \rightarrow 5 \geq 3x \rightarrow \frac{5}{3} \geq x$
 $\left(-\infty, \frac{5}{3}\right]$

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- a) $\left. \begin{array}{l} 2(x-5) - 3(2-2x) < 0 \\ -x + 3(2+x) > 3 \end{array} \right\} \rightarrow \left. \begin{array}{l} 8x < 16 \\ 2x > -3 \end{array} \right\}$
 $\rightarrow \left. \begin{array}{l} x < 2 \\ x > -\frac{3}{2} \end{array} \right\} \rightarrow \left(-\frac{3}{2}, 2\right)$
- b) $\left. \begin{array}{l} 4(2x-5) + 2(8-2x) + 7 \geq 0 \\ 3(1-2x) - 3(2x-1) + 1 \geq 0 \end{array} \right\} \rightarrow \left. \begin{array}{l} 4x + 3 > 0 \\ -12x + 7 \geq 0 \end{array} \right\}$
 $\rightarrow \left. \begin{array}{l} x > -\frac{3}{4} \\ x \leq \frac{7}{12} \end{array} \right\} \rightarrow \left(-\frac{3}{4}, \frac{7}{12}\right]$
- c) $\left. \begin{array}{l} \frac{x-2}{5} + \frac{1-x}{3} < 0 \\ \frac{2-3x}{6} - \frac{3-3x}{2} > 0 \end{array} \right\} \rightarrow \left. \begin{array}{l} -2x - 1 < 0 \\ 6x - 7 > 0 \end{array} \right\}$
 $\rightarrow \left. \begin{array}{l} x > \frac{1}{2} \\ x > \frac{7}{6} \end{array} \right\} \rightarrow \left(\frac{7}{6}, +\infty\right)$
- d) $\left. \begin{array}{l} -3(x+1) \cdot 2 - \frac{2+5x}{3} > 1 \\ 2 \cdot \frac{2x-1}{5} + \frac{1}{5} < 0 \end{array} \right\} \rightarrow \left. \begin{array}{l} -23x - 20 > 3 \\ 4x - 2 + 1 < 0 \end{array} \right\}$
 $\rightarrow \left. \begin{array}{l} x < -1 \\ x < \frac{1}{4} \end{array} \right\} \rightarrow (-\infty, -1)$

