1. p016e01 - Resuelve las ecuaciones:

   (a) $x^2 + 6 = 0$

   Sol: $\emptyset$

   (b) $x^2 - 9 = 0$

   Sol: $\{-3, 3\}$

   (c) $x^2 + 3x = 0$

   Sol: $\{-3, 0\}$

   (d) $3x^2 - 11x = 0$

   Sol: $\left\{0, \frac{11}{3}\right\}$

   (e) $4x^2 - 32x = 0$

   Sol: $\{0, 8\}$

   (f) $5x^2 = 0$

   Sol: $\{0\}$

   (g) $12x^2 - 18 = 0$

   Sol: $\left\{-\frac{\sqrt{6}}{2}, \frac{\sqrt{6}}{2}\right\}$

   (h) $3(-x + 1)(x + 1) = 3$

   Sol: $\{0\}$

   (i) $3(x^2 - 2) = 21$

   Sol: $\{-3, 3\}$

2. p016e02 - Resuelve las ecuaciones:

   (a) $(2x^2 + 11x) - 6 = 0$

   Sol: $\left\{-6, \frac{1}{2}\right\}$

   (b) $(x^2 - 10x) + 25 = 0$

   Sol: $\{5\}$

   (c) $(x^2 + x) + 1 = 0$

   Sol: $\emptyset$

   (d) $(x^2 - 2x) - 1 = 0$

   Sol: $\left\{1 + \sqrt{2}, -\sqrt{2} + 1\right\}$

   (e) $(3x^2 + 5x) - 2 = 0$

   Sol: $\left\{-2, \frac{1}{3}\right\}$

   (f) $(4x^2 - 4x) + 1 = 0$

   Sol: $\left\{\frac{1}{2}\right\}$

   (g) $(2x^2 - 9x) + 11 = 0$

   Sol: $\emptyset$

3. p016e03 - Resuelve las ecuaciones:

   (a) $-x(x - 2) + 9 = 4x + 6$

   Sol: $\{-3, 1\}$

(b) $-(x-1)(x+4)+2(x^2-3)=x-2$

> **Sol:** $\{0,4\}$

(c) $x(x-1)-2(x-3)(x-2)=2$

> **Sol:** $\{2,7\}$

(d) $(2x^2-11x)+12=0$

> **Sol:** $\left\{\frac{3}{2},4\right\}$

(e) $3(x-1)(x+2)=0$

> **Sol:** $\{-2,1\}$

(f) $(x-2)^2=3$

> **Sol:** $\left\{-\sqrt{3}+2,\sqrt{3}+2\right\}$

(g) $21x-100=-x+(x^2+21)$

> **Sol:** $\{11\}$

(h) $\frac{x}{3}\left(x-\frac{1}{6}\right)=x-1$

> **Sol:** $\emptyset$

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

> **Sol:** $\emptyset$

4. p016e04 - Resuelve las siguientes ecuaciones de segundo grado, pasándolas previamente a la forma general:

(a) $\frac{x+1}{x-1}-\frac{1}{x}=\frac{5}{2}$

> **Sol:** $\left\{-\frac{1}{3},2\right\}$

(b) $-\frac{2}{x+1}+\frac{3x+2}{x-1}=5$

> **Sol:** $\left\{-\frac{3}{2},3\right\}$

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

> **Sol:** $\{8\}$

(d) $\frac{x}{x+1}+\frac{x+1}{x}=\frac{13}{6}$

> **Sol:** $\{-3,2\}$

(e) $\left(-3+\frac{2(2x+1)}{2x-1}\right)+5=0$

> **Sol:** $\{0\}$

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

> **Sol:** $\emptyset$

(g) $-\frac{x-7}{x-1}+\frac{2x-1}{x+1}=4-\frac{3x-1}{x+2}$

> **Sol:** $\left\{-\frac{5}{4},5\right\}$

(h) $\frac{3x-4}{5x-16}=\frac{4x+1}{6x-11}$

> **Sol:** $\{-5,6\}$

(i) $\frac{-x+3}{5}=-\frac{4}{5}+\frac{2}{x}$

> **Sol:** $\{2,5\}$

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

> **Sol:** $\{2\}$

(k) $\frac{5}{2x+6}=\left(\left(\frac{1}{x(x-3)}+\frac{1}{(x-3)(x+3)}\right)+\frac{1}{x+3}\right)-\frac{1}{x-3}$

> **Sol:** $\{x\mid x\in\mathbb{R}\wedge-2(x-3)(x+3)+3(x-3)x(x-3)$ $\{x\mid x\in\mathbb{R}\wedge(x-3)(x+3)x(x-3)=0\}$

(l) $\frac{x}{2}+\frac{4}{x}=\frac{12}{x}$

> **Sol:** $\{-4,4\}$

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

Sol: $\left\{ -\frac{3}{2}, \frac{3}{2} \right\}$

(n) $\frac{-x+6}{3} - \frac{3(x-4)}{x+6} = \frac{x-2}{2}$

Sol: $\left\{ -3 + 3\sqrt{5}, -3\sqrt{5} - 3 \right\}$

5. p017e05 - Discute, sin resolver, las ecuaciones:

(a) $\left(x^2 - 9x\right) + 1 = 0$

Sol: $\left\{ -\frac{\sqrt{77}}{2} + \frac{9}{2}, \frac{\sqrt{77}}{2} + \frac{9}{2} \right\}$

(c) $\left(3x^2 - x\right) + 1 = 0$

Sol: $\emptyset$

(b) $\left(2x^2 + 6x\right) - 5 = 0$

Sol: $\left\{ -\frac{3}{2} + \frac{\sqrt{19}}{2}, -\frac{\sqrt{19}}{2} - \frac{3}{2} \right\}$

(d) $\left(x^2 - 12x\right) + 36 = 0$

Sol: $\{6\}$

6. p017e19 - Resuelve:

(a) $x^4 - 16 = 0$

Sol: $\{-2, 2\}$

Sol: $\{-3, 3\}$

(h) $\left(x^4 - 10x^2\right) + 25 = 0$

Sol: $\left\{ -\sqrt{5}, \sqrt{5} \right\}$

(b) $x^4 - 225x^2 = 0$

Sol: $\{-15, 0, 15\}$

(i) $\left(x^4 - 29x^2\right) + 100 = 0$

Sol: $\{-5, -2, 2, 5\}$

(c) $\left(x^4 - 10x^2\right) + 9 = 0$

Sol: $\{-3, -1, 1, 3\}$

(j) $\left(x^4 + 21x^2\right) - 100 = 0$

Sol: $\{-2, 2\}$

(d) $\left(2x^4 + 11x^2\right) - 6 = 0$

Sol: $\left\{ -\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2} \right\}$

(k) $9x^4 + 16 = 40x^2$

Sol: $\left\{ -2, -\frac{2}{3}, \frac{2}{3}, 2 \right\}$

(e) $\left(x^4 - 6x^2\right) + 8 = 0$

Sol: $\left\{ -2, 2, -\sqrt{2}, \sqrt{2} \right\}$

(l) $\left(x^4 - \frac{5x^2}{4}\right) + \frac{1}{4} = 0$

Sol: $\left\{ -1, -\frac{1}{2}, \frac{1}{2}, 1 \right\}$

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

Sol: $\emptyset$

(g) $\left(x^4 - 8x^2\right) - 9 = 0$

(m) $-x^2 + 34 = \frac{225}{x^2}$

Sol: $\{-5, -3, 3, 5\}$

(n) $x^2 = \frac{12}{x^2-1}$

Sol: $\{-2, 2\}$

(ñ) $\left(x^4 + 4x^2\right) + 8 = 0$

Sol: $\emptyset$

(o) $-2 + \frac{8}{x^2-5} = \frac{(x-3)(x+3)}{x^2-1}$

Sol: $\left\{-3, 3, -\frac{\sqrt{21}}{3}, \frac{\sqrt{21}}{3}\right\}$

(p) $\frac{x^2(2x+5)}{x+1} = \frac{9(-x+1)}{2x-5}$

Sol: $\left\{-\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2}\right\}$

7. p018e20 - Resuelve:

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

Sol: $\left\{\frac{1}{2}, 1\right\}$

(b) $2\sqrt{x-3} + \sqrt{6x-8} = 6$

Sol: $\{4\}$

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

Sol: $\{7\}$

(d) $\sqrt{2x-1} + 5 = 2\sqrt{x+3} + 2$

Sol: $\{1, 13\}$

(e) $-\sqrt{x-2} + \sqrt{x-1} = 1$

Sol: $\{2\}$

(f) $\sqrt{x-1} + 2 = x - 5$

Sol: $\{10\}$

(g) $\sqrt{x} + x = 6$

Sol: $\{4\}$

(h) $\sqrt{x} + \sqrt{x+4} = 4$

Sol: $\left\{\frac{9}{4}\right\}$

(i) $\sqrt{3x-2} - 4 = 0$

Sol: $\{6\}$

(j) $\sqrt{2x+1} = x - 1$

Sol: $\{4\}$

(k) $-x + \sqrt{-3x+7} = 7$

Sol: $\{-3\}$

(l) $3\sqrt{6x+1} - 5 = 2x$

Sol: $\left\{\frac{1}{2}, 8\right\}$

(m) $\sqrt{3x+1} + 1 = 3x$

Sol: $\{1\}$

(n) $\sqrt{9x^2 - 11} + 1 = 3x$

Sol: $\{2\}$

(ñ) $\sqrt{(x^2+x) - 1} = -x + 2$

Sol: $\{1\}$

(o) $\sqrt{\frac{-x+2}{x+2}} = \frac{1}{2}$

Sol: $\left\{\frac{6}{5}\right\}$

(p) $\sqrt{x+4} = -\sqrt{x-1}+3$

Sol: $\left\{\frac{13}{9}\right\}$

(q) $\sqrt{x+4}+\sqrt{2x-1}=6$

Sol: $\{5\}$

(r) $2\sqrt{x+4} = \sqrt{5x+4}$

Sol: $\{12\}$

(s) $2\sqrt{2x-1} = \sqrt{2x-9}+\sqrt{6x-5}$

Sol: $\{5\}$

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

Sol: $\emptyset$