

START

END  $\pi$

$$\frac{x}{x-6} = \frac{1}{x-4}$$

$$x(x-4) = x^2 - 4x$$

$$0 = x^2 - 5x + 6$$

$$0 = (x-3)(x-2)$$

$$x = 2 \text{ or } 3$$

6, -1

$$\frac{4}{x+2} = \frac{2x}{x^2 - x - 6}$$

5

$$\left(\frac{2w}{5}\right)^2 + 2\left(\frac{2w}{5}\right) - 48 = 0$$

$$u = \frac{2w}{5}$$

$$u^2 + 2u - 48 = 0$$

$$(u+8)(u-6) = 0$$

$$u = -8 \text{ or } u = 6$$

$$\frac{2w}{5} = -8 \quad \frac{2w}{5} = 6$$

$$w = -20 \quad w = 15$$

15

2, 3

-20, 15

$$\frac{3}{x+2} + \frac{12}{x^2-4} = \frac{-1}{x-2}$$

$$3(x-2) + 12 = -1(x+2)$$

$$3x - 6 + 12 = -x - 2$$

$$4x = -8$$

$$x = -2 \quad \text{No solution}$$

No Solution

$$(x-3)^2 + 3(x-3) - 10 = 0$$

$$u = x-3$$

$$u^2 + 3u - 10 = 0$$

$$(u+5)(u-2) = 0$$

$$u = -5 \quad u = 2$$

$$x-3 = -5 \quad x-3 = 2$$

$$x = -2 \quad x = 5$$

3, -4

$$\frac{x}{x+1} = \frac{16}{x^2-2x-3} - \frac{4}{x-3}$$

$$x(x-3) = (16 - 4(x+1))(x-3)$$

$$x^2 - 3x = 16 - 4x - 4$$

$$x^2 + x - 12 = 0$$

$$(x+4)(x-3) = 0$$

$$x = -4 \text{ or } 3$$

-2

-2, 5

-4

$$3 + \sqrt{x-1} = x$$

$$\sqrt{x-1} = x-3$$

$$x-3 = x^2 - 6x + 9$$

$$0 = x^2 - 7x + 10$$

$$0 = (x-5)(x-2)$$

$$x = 5 \text{ or } 2$$

16

$$2x - 5\sqrt{x-12} = 0$$

$$u = \sqrt{x}$$

$$2u^2 - 5u - 12 = 0$$

$$(u-4)(2u+3) = 0$$

$$u = 4 \quad u = -\frac{3}{2}$$

$$\sqrt{x} = 4 = 16 \quad \sqrt{x} = -\frac{3}{2} = \frac{9}{4}$$

4

$$\sqrt{5-x} + 5 = x$$

$$\sqrt{5-x} = x-5$$

$$5-x = x^2 - 10x + 25$$

$$0 = x^2 - 9x + 20$$

$$0 = (x-4)(x-5)$$

$$x = 4 \text{ or } 5$$

5

4, -3/2

5

$$3 + \sqrt{x-1} = x \quad \frac{4x^2-1}{2x^2-5x-3}$$

5, 2

$$6x^4 - 13x^2 + 5 = 0$$

-1/7

$$\frac{3}{2x} - \frac{2x}{x+1} = -2$$

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

$$3x+3 - 4x^2 = -4x^2 - 4x$$

$$7x = -3$$

$$x = -\frac{3}{7}$$

END  $\infty$

END  $\Delta$