11.8 Solving Rational Equations

$$\frac{5}{y+2} = \frac{y}{3} \qquad y \neq -2$$

$$5 \cdot 3 = y(y+2)$$

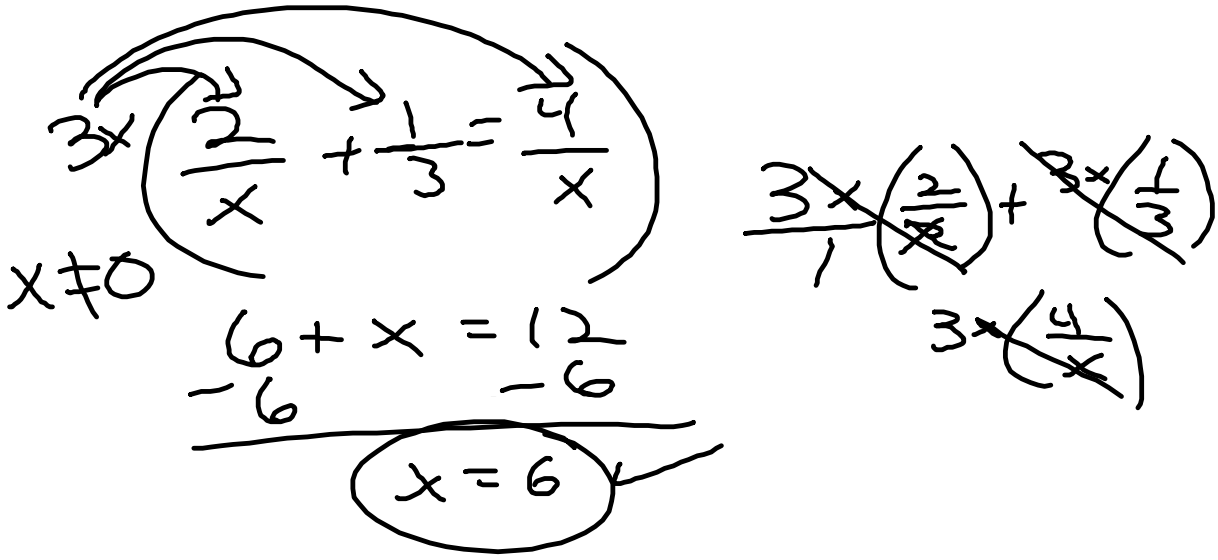
$$15 = y^2 + 2y$$

$$-15 \qquad -15$$

$$0 = y^2 + 2y - 15$$

$$0 = (y+5)(y-3)$$

$$y = -5, 3$$


3x
2/x + 1/3 = 4/x
x≠0
6 + x = 12
−6 −6
x = 6
3x (2/x) + 3x (1/3)
3x (4/x)

$$15x\left(\frac{2}{5x} = \frac{-3}{15} + \frac{1}{x}\right) \quad x \neq 0$$

$$6 = -3x + 15$$

$$-15 \qquad -15$$

$$-9 = -3x$$

$$\frac{-9}{-3} = \frac{-3x}{-3}$$

$$3 = x$$

$$\frac{-4}{(y-3)} + \frac{1}{(y+4)} = \frac{-10}{(y+4)(y-3)}$$

$(y+4)(y-3)$

$y \neq 3, -4$

$$-4y - 16 + y^2 + y - 12 = -10$$

$$y^2 - 3y - 28 = -10$$

$$+10 \quad +10$$

$$y^2 - 3y - 18 = 0$$

$$(y-6)(y+3) = 0$$

$$y = 6, -3$$

$(x-7)(x-2)\left(\frac{3}{(x-7)}+\frac{1}{1}=\frac{8}{x^2-9x+14}\right)$

$(x-7)(x-2)$

$x \neq 2, 7$

$3x-6+x^2-9x+14=8$

$x^2-6x+8=8$

$-8 \quad -8$

$x^2-6x=0$

$x(x-6)=0$

$x=0, 6$

$x=0$

$x-6=0$

$+6 \quad +6$

$x=6$

$$(x-6)(x+4)\left(\frac{8}{x+4}+1=\frac{5x}{x^2-2x-24}\right)$$

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

$x \neq 6, -4$

$$8x-48+x^2-2x-24=5x$$

$$x^2+6x-72=5x$$

$$-5x \quad -5x$$

$$x^2+x-72=0$$

$$(x+9)(x-8)=0$$

$$x=-9, 8$$