

Section 2.7B

Nonlinear Inequalities

Solve the inequality. Then graph the solution set. (Sign chart method)

$(-\infty, -\frac{3}{2}) \cup (1, 4)$

$\frac{x-1}{(2x+3)(x-4)} < 0$

$\frac{x-1}{(2x+3)(x-4)} = 0$        $x-1=0$   
 $x \neq -\frac{3}{2}, 4$                $x=1$

$\frac{(-)}{(-)(-)} \quad \frac{(-)}{(+)(-)} \quad \frac{(+)}{(+)(-)} \quad \frac{(+)}{(+)(+)}$

Solve the inequality. Then graph the solution set.

$(-2, 3]$

$\frac{x+12}{x+2} \geq 3$

$\frac{x+12}{x+2} - \frac{3(x+2)}{x+2} \geq 0$

$\frac{x+12-3x-6}{x+2} = 0$

$\frac{-2x+6}{x+2} = 0$        $-2x+6=0$   
 $x \neq -2$                $-2x=-6$   
                              $x=3$

$\frac{(+)}{(-)} \quad \frac{(+)}{(+)} \quad \frac{(-)}{(+)}$

Neg      pos      Neg

Solve the inequality. Then graph the solution set.

$$\frac{5}{x-6} > \frac{3}{x+2} \quad (-14, -2) \cup (6, \infty)$$

$$\frac{5}{x-6} - \frac{3}{x+2} > 0$$

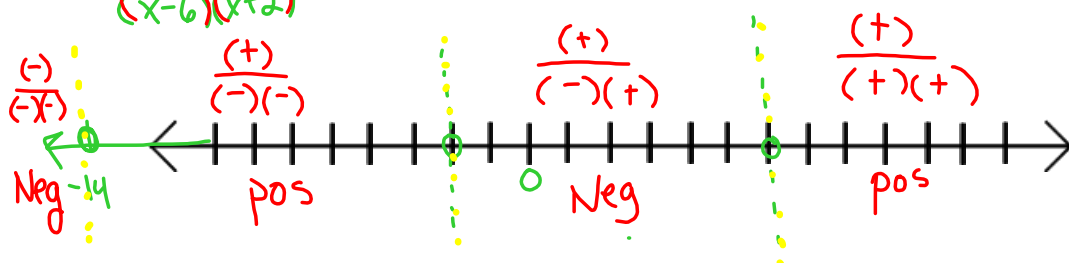
$$\frac{5(x+2) - 3(x-6)}{(x-6)(x+2)} = 0$$

$$\frac{5x+10-3x+18}{(x-6)(x+2)} = 0$$

$$\frac{(2x+28)}{(x-6)(x+2)} = 0$$

$$2x+28=0$$

$$x=-14$$



Solve the inequality. Then graph the solution set.

$$\frac{3x}{x-1} \leq \frac{x}{x+4} + 3 \quad (-\infty, -4) \cup [-2, 1) \cup [6, \infty)$$

$$\frac{-x^2+4x+12}{(x-1)(x+4)} = 0$$

$$\frac{3x}{x-1} - \frac{x}{x+4} - 3 \leq 0$$

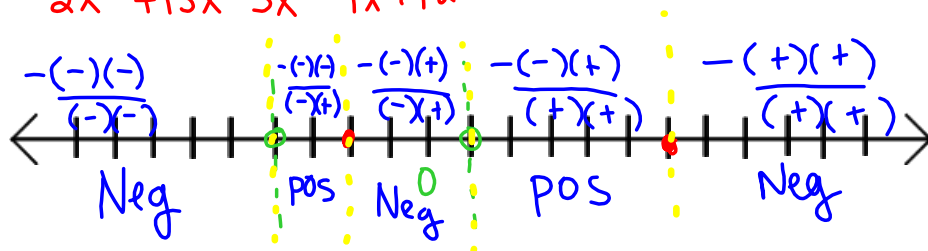
$$\frac{-(x^2-4x-12)}{(x-1)(x+4)} = 0$$

$$\frac{3x(x+4) - x(x-1) - 3(x-1)(x+4)}{(x-1)(x+4)} = 0$$

$$\rightarrow \frac{-(x-6)(x+2)}{(x-1)(x+4)} = 0$$

$$3x^2+12x-x^2+x-3(x^2+3x-4) =$$

$$2x^2+13x-3x^2-9x+12 = 0$$



Section 2.7b

Pg. 185-187: #41-51 odd, 57, 59, 71-74, 77, 82