

2/14 2.8 Absolute Value Inequalities

Ex1: $|3x| \leq 9$

GO LA

$\frac{3x}{3} \leq \frac{9}{3}$ and $\frac{-(3x)}{-1} \leq \frac{9}{-1}$
 $3x \geq -9$

$x \leq 3$ and $x \geq -3$



$[-3, 3]$

Ex2: $-2|5x+2|+8 > -4$ Isolate the Absolute Value

$$\frac{-2|5x+2| - 8}{-2} > \frac{-12}{-2}$$

$$|5x+2| < 6$$

* Step to determine and/or

$$5x+2 < 6 \quad \text{and} \quad 5x+2 > -6$$

$$\frac{5x}{5} < \frac{4}{5}$$

$$x < \frac{4}{5}$$

$$\frac{5x}{5} > \frac{-8}{5}$$

$$x > -\frac{8}{5}$$

$$\left(-\frac{8}{5}, \frac{4}{5} \right)$$

Ex3: $|x^2 + 5x| < 6$

$x^2 + 5x < 6$ and $x^2 + 5x > -6$

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

$x^2 + 5x + 6 > 0$

$(x+6)(x-1) < 0$ and $(x+3)(x+2) > 0$

$x+6=0$ $x-1=0$

$x+3=0$ $x+2=0$

$x = -6$

$x = 1$

$x = -3$

$x = -2$

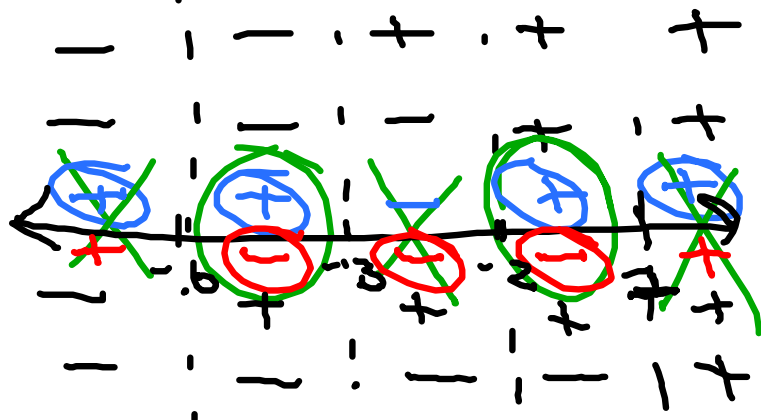
||

$x+3$

$x+2$

$x+6$

$x-1$



$(-6, -3) \cup (-2, 1)$

Ex4: $\left| \frac{3x-2}{x} \right| \geq 2$

$$\frac{3x-2}{x} \geq 2$$

$$\frac{3x-2}{x} - \frac{2x}{1x} \geq 0$$

LCD x

$$x-2 \geq 0$$

CV $x=2$ $x=0$

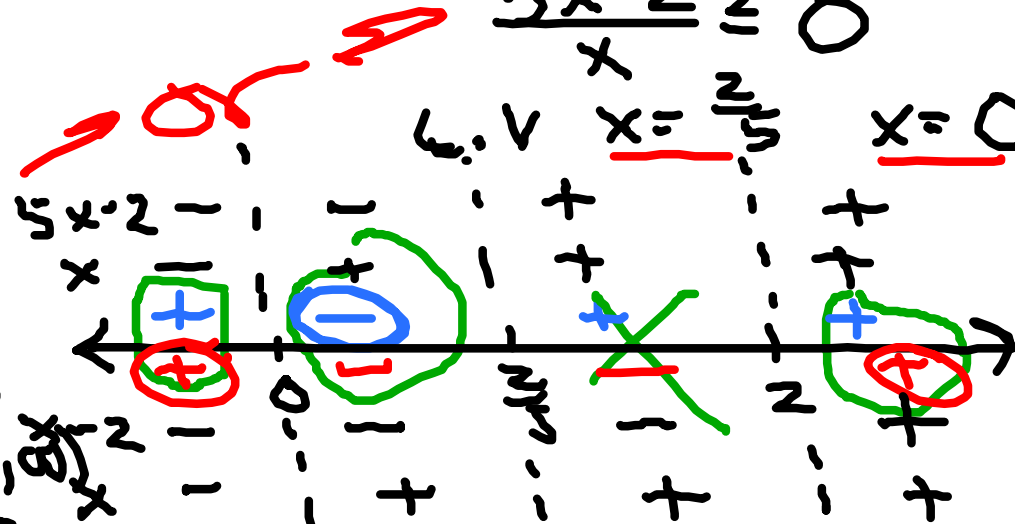
OR

$$\frac{3x-2}{x} \leq -2$$

$$\frac{3x-2}{x} + \frac{2x}{x} \leq 0$$

$$\frac{5x-2}{x} \leq 0$$

CV $x = \frac{2}{5}$ $x=0$



$$(-\infty, 0) \cup (0, \frac{2}{5}] \cup [2, \infty)$$

HW pg 153-154 1-8 all, 34-46 even & Wksht 32-36 even