

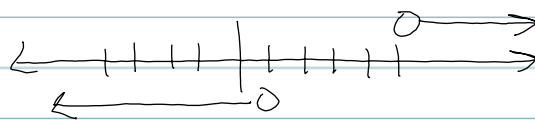
2.7 Absolute value inequalities

Absolute value greater than OR \rightarrow everything

$$|x-3| > 2$$

$$\begin{array}{l} x-3 > 2 \text{ OR } x-3 < -2 \\ +3 \quad +3 \qquad +3 \quad +3 \end{array}$$

$$x > 5 \qquad x < 1$$

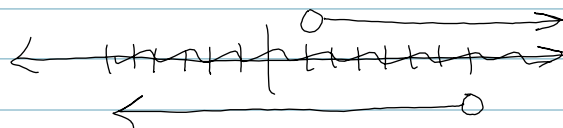


$$(-\infty, 1) \cup (5, \infty)$$

$$|x-4| > -3$$

$$\begin{array}{l} x-4 > -3 \text{ OR } x-4 < 3 \\ +4 \quad +4 \qquad +4 \quad +4 \end{array}$$

$$x > 1 \text{ (OR) } x < 7$$



$$(-\infty, 1) \cup (7, \infty)$$

$$|x-4| > -3$$

$$\begin{array}{l} \rightarrow \text{pos \#} > -3 \\ \text{get } (-\infty, \infty) \end{array}$$

Absolute value less than ALWAYS \rightarrow common

$$2|x-3| + 5 < 11$$

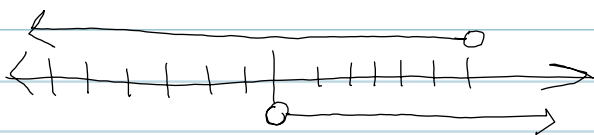
$$\begin{array}{l} \leq \geq \bullet [\\ < > \circ (\end{array}$$

$$\frac{2|x-3|}{2} < \frac{6}{2}$$

$$|x-3| < 3$$

$$\begin{array}{l} x-3 < 3 \text{ and } x-3 > -3 \\ +3 \quad +3 \qquad +3 \quad +3 \end{array}$$

$$x < 6 \qquad x > 0$$



$$(0, 6)$$

$$|x+7| < -2$$

$$x+7 < -2 \text{ and } x+7 > 2$$

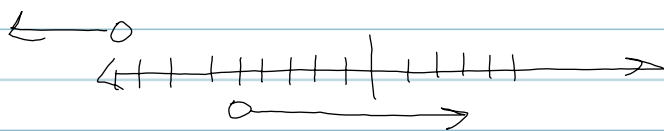
$$x < -9$$

$$x > -5$$

$$|x+7| < -2$$

$$\text{pos} \# < -2$$

\emptyset



\emptyset

LCD
24

$$\frac{-2}{3} \left| \frac{1}{2}x + 2 \right| \frac{-3}{4} < \frac{3}{8}$$

$$L < -4$$

$$-16 \left| \frac{1}{2}x + 2 \right| -18 < 9$$

$$-16 \left| \frac{1}{2}x + 2 \right| < 27$$

$$\rightarrow \left| \frac{1}{2}x + 2 \right| > \frac{27}{16}$$

LCD
16

$$\frac{1}{2}x + 2 > \frac{27}{16} \text{ (OR) } \frac{1}{2}x + 2 < \frac{27}{16}$$

$$8x + 32 > -27$$

$$8x + 32 < 27$$

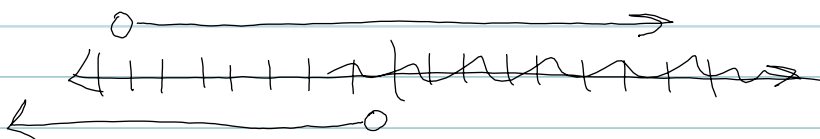
$$8x > -59$$

$$8x < -5$$

$$x > \frac{-59}{8}$$

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

$$\frac{-59}{8}$$



$(-\infty, \infty)$