

1/28 2.7 Linear Inequalities

Ex1: Review $-3x + 2 \leq 17$

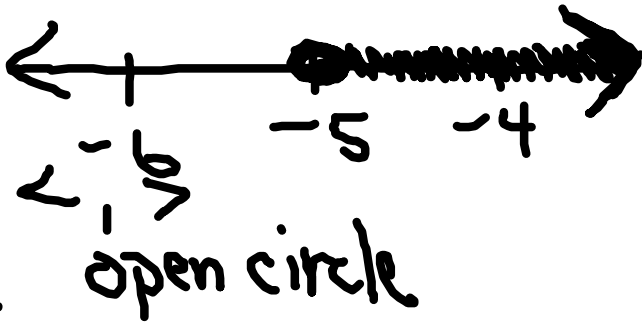
$$-3x + \frac{2}{-2} \leq \frac{17}{-2}$$

$$\frac{-3x}{-3} \leq \frac{15}{-3}$$



$$x \geq -5$$

\leq, \geq
closed circle



$<, >$
open circle

Interval Notation

$$[-5, \infty)$$

Smallest \rightarrow largest

Set Builder Notation

$$\{x : x \geq -5\}$$

Ex2: $a < -6$

$$(-\infty, -6)$$

Ex3: $-8 < m \leq 3$

$$(-8, 3]$$

Ex4: $y < -5$ or $y \geq 2$

$$(-\infty, -5) \cup [2, \infty)$$

Ex5:



Inequality: $3 \leq x < 5$

Interval Notation: $[3, 5)$

Ex6: $(-\infty, 3) \cup [8, \infty)$

Inequality: $x < 3$ or $x \geq 8$

Ex7: Solve and write the solution in interval notation

$$2(m+5) - 3m + 1 \geq 5$$

$$2m + 10 - 3m + 1 \geq 5$$

$$-1m + 11 \geq 5$$

$$\frac{-1m}{-1} \geq \frac{-6}{-1}$$

$$m \leq 6 \implies (-\infty, 6]$$



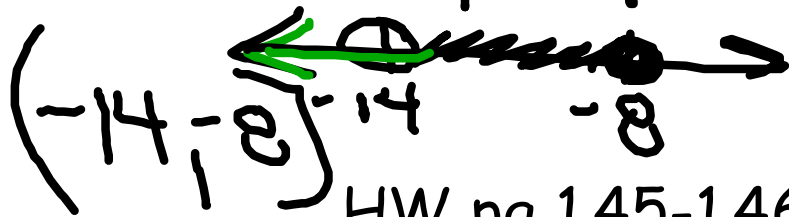
Ex8: Solve and write the solution in interval notation

$$3 \left(-12 < \frac{2r-8}{3} \leq -8 \right)$$

$$\begin{array}{r} -36 < 2r-8 \leq -24 \\ +8 \quad +8 \quad +8 \end{array}$$

$$\begin{array}{r} -28 < 2r \leq -16 \\ \frac{-28}{2} < \frac{2r}{2} \leq \frac{-16}{2} \end{array}$$

$$-14 < r \leq -8$$



$$\frac{2r-8}{3} > -12 \quad \text{and} \quad \frac{2r-8}{3} \leq -8$$



$$r > -14 \quad \text{and} \quad r \leq -8$$



HW pg 145-146 1-10, 13-22 all