

Solving Inequalities

$5 > 3$ Greater Than $5 \geq 3$ Greater Than or Equal to
 $3 < 5$ Less Than $3 \leq 5$ Less Than or Equal to

Addition Property of Inequalities

$5 > 3$ ~~$+3$~~ $+2$ $+2$ ~~$x - 3 > 5$~~ $+3$ $+3$ * You can add the same thing to both sides.
 $7 > 5$ $x > 8$

Subtraction Property of Inequalities

$5 > 3$ ~~$+3$~~ -2 -2 ~~$x + 3 > 5$~~ -3 -3 * You can subtract the same thing from both sides.
 $3 > 1$ $x > 2$

Multiplication Property of Inequalities

(-2) $5 > 3$ (-2) ~~(-3) $x > 5$ (-3)~~ * When multiplying by a negative, switch the sign.
 $-10 < -6$ ~~-3~~ $x < -15$
 (2) $5 > 3$ (2) $10 > 6$

Division Property of Inequalities

$$\frac{6}{2} > \frac{4}{2}$$

$$3 > 2$$

$$3 > 2$$

$$\frac{-2x}{-2} > \frac{14}{-2}$$

$$x < -7$$

$$x < -7$$

* When you divide by a negative, flip the sign.

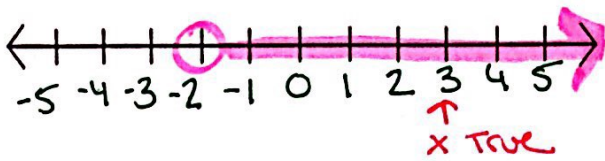
$$\frac{6}{-2} > \frac{4}{-2}$$

$$-3 < -2$$

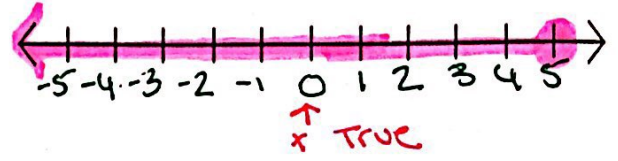
$$-3 < -2$$

Examples: Graphing Inequalities

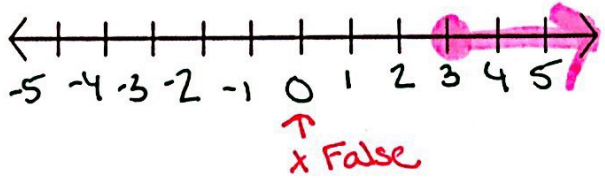
1) $x > -2$ Test Point $3 > -2$



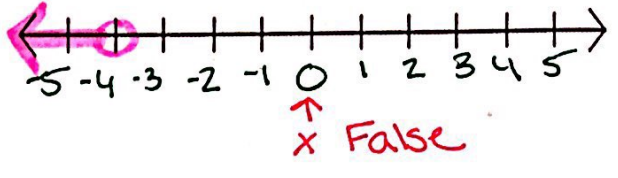
2) $x \leq 5$ $0 \leq 5$



3) $3 \leq x$ $3 \leq 0$

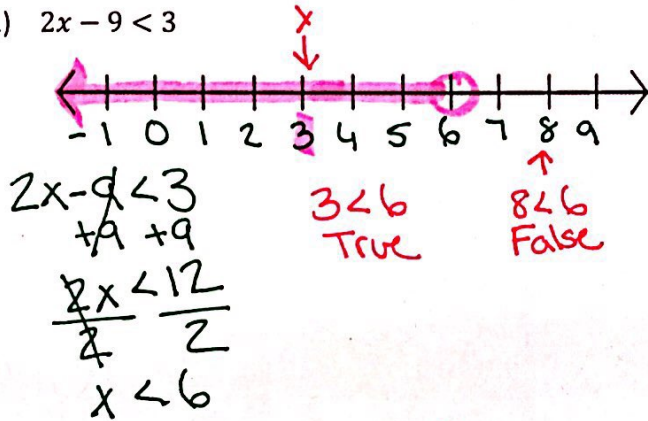


4) $-4 > x$ $-4 > 0$

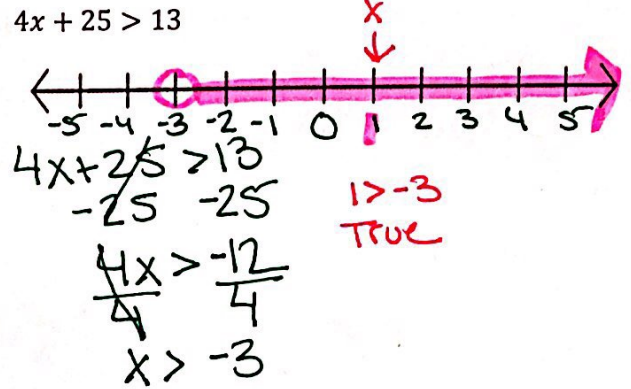


Examples: Solve and graph each of the following Inequalities.

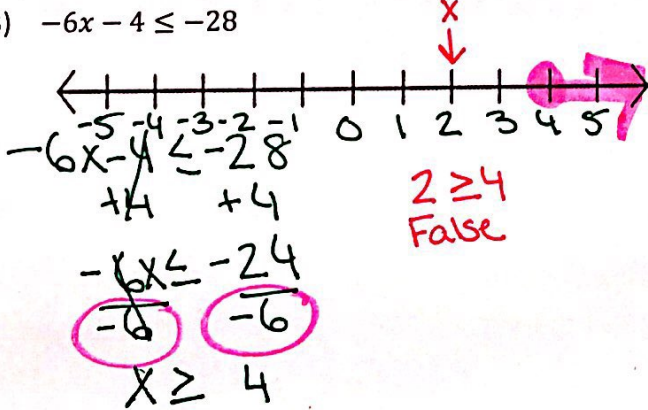
1) $2x - 9 < 3$



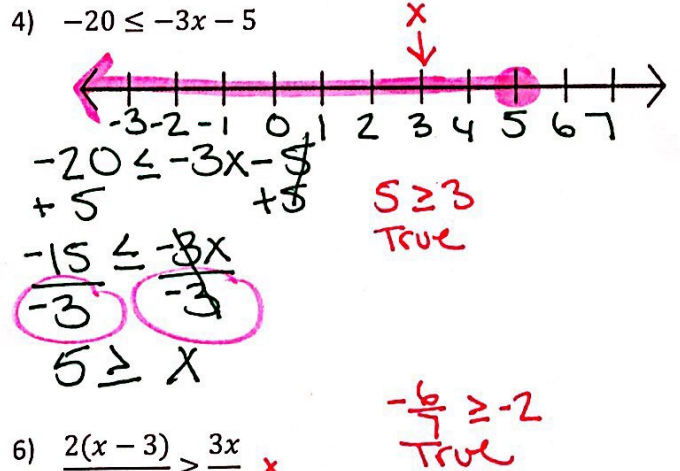
2) $4x + 25 > 13$



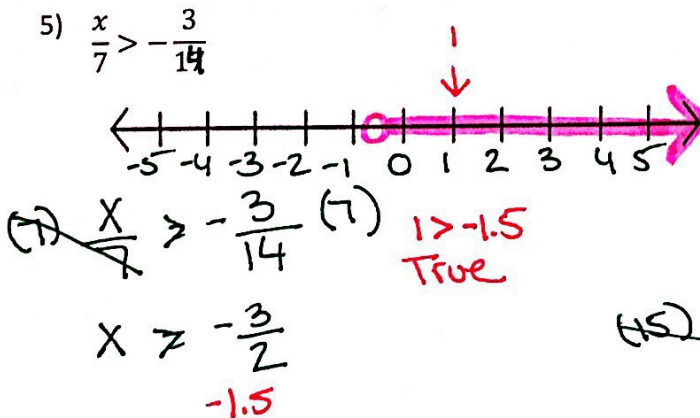
3) $-6x - 4 \leq -28$



4) $-20 \leq -3x - 5$



5) $\frac{x}{7} > -\frac{3}{14}$



6) $\frac{2(x-3)}{15} \geq \frac{3x}{5}$

