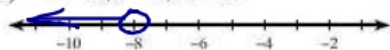


Quadratic Inequalities - IN CLASS NOTES

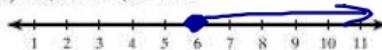
Solve each inequality and graph its solution.

1) $-4 - 8(2 - b) < -84$



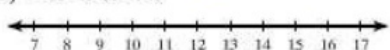
$$\begin{aligned} -4 - 8(2 - b) &< -84 \\ +4 & \quad +4 \\ \hline -8(2 - b) &< -80 \\ -8 & \quad -8 \\ \hline 2 - b &> -10 \\ -2 & \quad -2 \\ \hline -b &> -12 \\ \hline b &< -8 \end{aligned}$$

2) $5(2 + 5n) \geq 160$



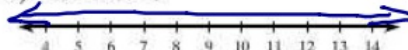
$$\begin{aligned} \frac{5(2 + 5n)}{5} &\geq \frac{160}{5} \\ 2 + 5n &\geq 32 \\ -2 & \quad -2 \\ \hline 5n &\geq 30 \\ \hline n &\geq 6 \end{aligned}$$

3) $-7r + 7r > 0$



$$\begin{aligned} -7r + 7r &> 0 \\ 0 &> 0 \\ \text{No Sol.} \end{aligned}$$

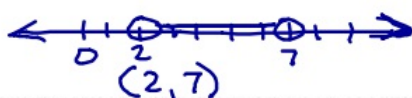
4) $4x - 4x < 3$



$$\begin{aligned} 4x - 4x &< 3 \\ 0 &< 3 \\ \text{All Solution.} \end{aligned}$$

5) Draw the following inequality on a number line:

$7 > x > 2$

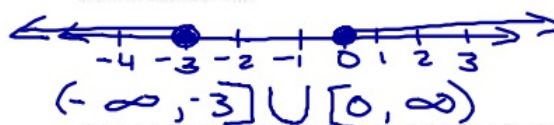


Give the inequality above in set and interval notation.

$(2, 7)$

6) Draw the following inequality on a number line:

line: \cup union
 $x \leq -3$ or $x \geq 0$



$(-\infty, -3] \cup [0, \infty)$

Give the inequality above in set and interval notation.

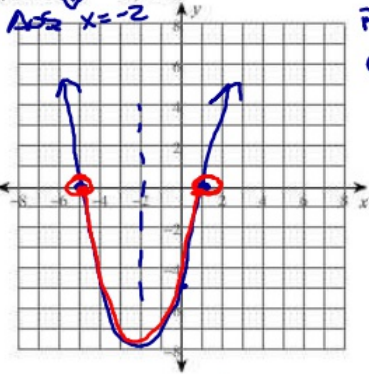
$(-\infty, -3] \cup [0, \infty)$

$<$ or \leq between

$>$, \geq union

Use the graph of the quadratic equation to graph the quadratic inequality on a number line and give the solutions in interval and set notation.

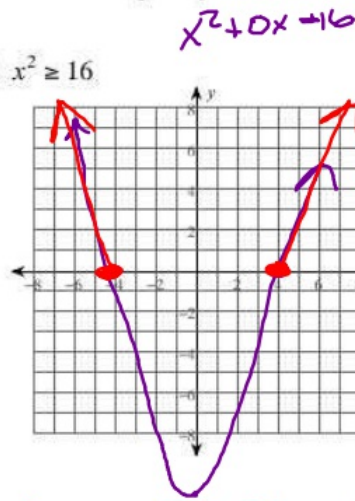
7) $(x+5)(x-1) < 0$



Sol. Domain $(-5, 1)$
 $-5 < x < 1$

Plug in "0"
 $(5)(-1) < 0$
 $-5 < 0$

8) $x^2 \geq 16$

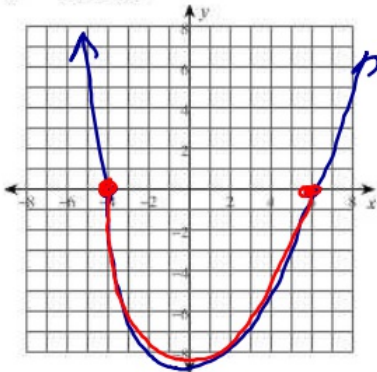


$D: (-\infty, -4] \cup [4, \infty)$
 $x \leq -4$ or $x \geq 4$

$x^2 + 0x + 16$

$x^2 \geq 16$
 $\frac{-10 \pm \sqrt{100}}{2}$
 $x^2 - 16 \geq 0$
 $(x-4)(x+4) \geq 0$
 $\downarrow \quad \downarrow$
 $4 \quad -4$
 $x^2 \geq 16$
 $0 \geq 16$
 $N0$

9) $x^2 - 2x \leq 24$



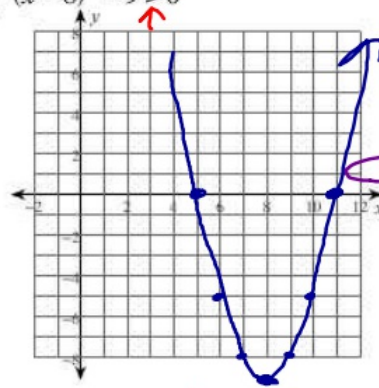
$x^2 - 2x \leq 24$
 $\frac{-24}{-24} \quad \frac{-6 \pm \sqrt{36}}{-24}$
 $x^2 - 2x - 24 \leq 0$
 $(x+4)(x-6)$
 $\downarrow \quad \downarrow$
 $-4 \quad +6$

$-6 + 1 = -2$
 $-6 \bullet 4 = -24$

$\begin{matrix} 1 & 2 & 4 \\ 2 & 1 & 2 \\ 3 & 3 & 8 \\ 4 & 0 & 4 \end{matrix}$

$-4 \leq x \leq 6$
 $[-4, 6]$

10) $(x-8)^2 - 9 > 0$



$(-\infty, 5) \cup (11, \infty)$
 $x < 5$ or $x > 11$

5	0
6	-5
7	-8
8	-9
9	-8
10	-5
11	0