

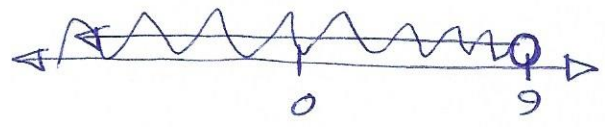
Date: 11-07-18

Linear inequalities :

$$2x - 5 < 13$$

$$\begin{array}{r}
 + 5 \phantom{<} \\
 \hline
 2x < 18 \\
 \phantom{<} \\
 \phantom{<} \\
 \hline
 \frac{2x}{2} < \frac{18}{2}
 \end{array}$$

$$\therefore x < 9$$



set notation or inequality notation.

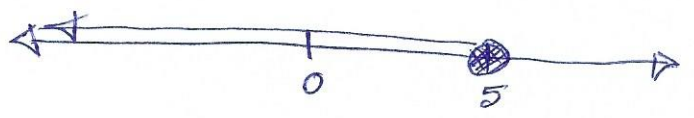
$(-\infty, 9)$
interval notation.

$$\begin{array}{r}
 4x - 3 \leq 2x + 7 \\
 -2x - 2x
 \end{array}$$

$$\begin{array}{r}
 \Rightarrow 2x - 3 \leq 7 \\
 + 3 \\
 + 3
 \end{array}$$

$$\Rightarrow \frac{2x}{2} \leq \frac{10}{2}$$

$$\therefore x \leq 5$$



$(-\infty, 5]$

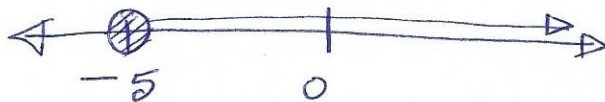
Book page 616.

52.

$$\begin{array}{r} 5r+4 \geq 4r-1 \\ -4r \quad -4r \end{array}$$

$$\Rightarrow \begin{array}{r} r+4 \geq -1 \\ -4 \quad -4 \end{array}$$

$$\Rightarrow r \geq -5$$



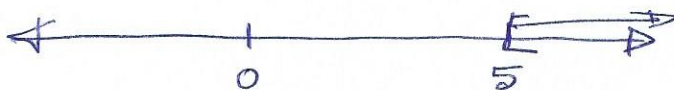
$$[-5, \infty)$$

$$\# -3x+7 \leq -8$$

$$\begin{array}{r} -7 \quad -7 \end{array}$$

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

$$x \geq 5$$



$$[5, \infty)$$

60.

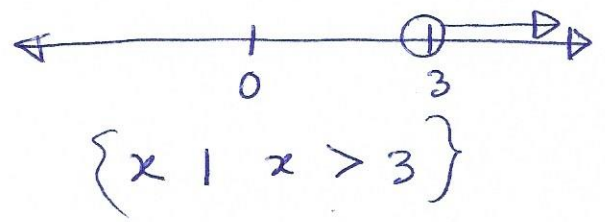
$$\begin{array}{r} -9 > -7 \\ (-1) \quad (-1) \\ \downarrow \\ 9 < 7 \end{array}$$



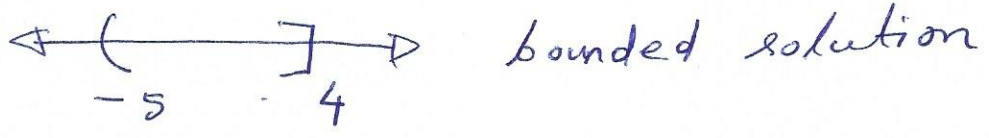
$$(-\infty, 7)$$

#53.

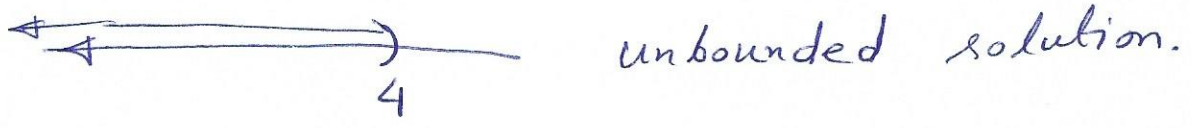
$$\begin{array}{r}
 4 < 1+x \\
 -x \quad -x \\
 \hline
 4-x < 1 \\
 -4 \quad -4 \\
 \hline
 -x < -3 \\
 \frac{-x}{-1} < \frac{-3}{-1} \\
 \downarrow \\
 x > 3
 \end{array}$$



$-5 < x \leq 4$



$-\infty < x < 4$



$$\begin{array}{r}
 -2 \leq p+1 < 4 \\
 -1 \quad -1 \quad -1
 \end{array}$$

$\Rightarrow -3 \leq p < 3$

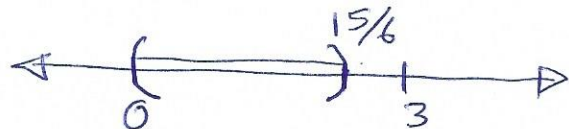


$[-3, 3)$

$$\# \quad \begin{array}{ccc} -3 < 6h - 3 < 12 \\ +3 & +3 & +3 \end{array}$$

$$\Rightarrow \frac{0}{6} < \frac{6h}{6} < \frac{15}{6}$$

$$\Rightarrow 0 < h < 15/6$$



$$\{x \mid 0 < h < 15/6\}$$

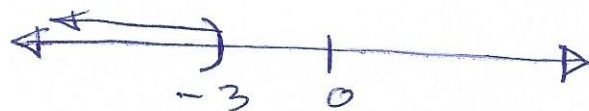
$$\# 75. \quad -12 > 7x + 9$$

$$\begin{array}{r} -7x \quad -7x \\ \hline -12 - 7x > 9 \\ +12 \quad \quad +12 \\ \hline \end{array}$$

$$\Rightarrow \frac{-7x}{-7} > \frac{21}{-7}$$

$$\downarrow$$

$$x < -3$$



$$\{x \mid -\infty < x < -3\}$$

$$\# 81. \quad 8 - 6(x - 3) > -4x + 12$$

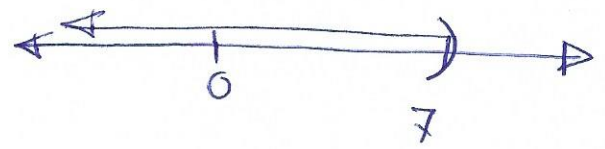
$$\Rightarrow 8 - 6x + 18 > -4x + 12$$

$$\Rightarrow \begin{array}{ccc} 26 - 6x > -4x + 12 \\ +4x & +4x \end{array}$$

$$\Rightarrow \begin{array}{ccc} 26 - 2x > 12 \\ -26 & -26 \end{array}$$

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

$\Rightarrow x < 7$



$(-\infty, 7) \text{ or } \{x \mid x < 7\}$

#87. $2a + 3(a+15) > -4a - (3a-1) + 6$

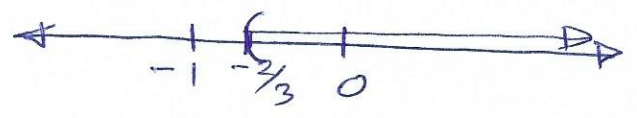
$\Rightarrow 2a + 3a + 15 > -4a - 3a + 1 + 6$

$\Rightarrow \begin{matrix} 5a + 15 \\ + 7a \end{matrix} > \begin{matrix} -7a + 7 \\ + 7a \end{matrix}$

$\Rightarrow \begin{matrix} 12a + 15 \\ - 15 \end{matrix} > \begin{matrix} 7 \\ - 15 \end{matrix}$

$\Rightarrow \frac{12a}{12} > \frac{-8}{12}$

$\Rightarrow a > -\frac{2}{3}$



$(-\frac{2}{3}, \infty) \text{ or } \{a \mid a > -\frac{2}{3}\}$