

9.2 p. 580

ex 6

$$|x| = 14$$

$$|x - 0| = 14$$

$$x = 14 \text{ or } x = -14$$

$$|-14| = 14 \quad |14| = 14$$



$$|4 - 3| = |3 - 4|$$

1 1

}}

ex

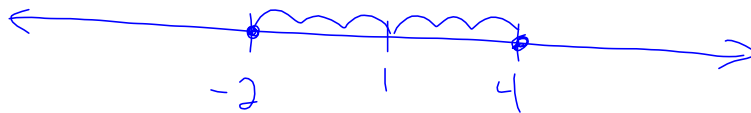
$$|x - 1| = 3$$

any #s

whose
distance
from

$$|4 - 1| \stackrel{?}{=} 3 \checkmark$$

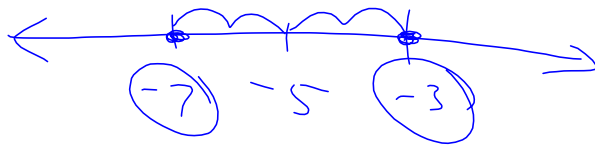
$$|-2 - 1| \stackrel{?}{=} 3 \checkmark$$



ex $|x + 5| = 2$

$$|x - (-5)| = 2$$

#s whose
dist.
from -5 is 2



$$|x - 1| = 3$$

$$x - 1 = 3 \quad \text{or} \quad -(x - 1) = 3$$

$$+1 \quad +1 \quad -x + 1 = 3$$

$$-1 \quad -1$$

$$x = \textcircled{4}$$

$$-x = 2$$

$$x = \textcircled{-2}$$

$$|x + 5| = 2$$

$$\begin{array}{l} x + 5 = 2 \\ -5 \quad -5 \\ \hline x = -3 \end{array} \quad \text{or} \quad \begin{array}{l} -(x + 5) = 2 \\ -x - 5 = 2 \\ +5 \quad +5 \\ \hline -x = 7 \\ x = -7 \end{array}$$

$$\underline{\text{ex 8}} \quad |5x| = 30$$

$$\begin{array}{l} 5x = 30 \\ \hline x = 6 \end{array} \quad \text{or} \quad \begin{array}{l} -5x = 30 \\ \hline x = -6 \end{array}$$

$$\underline{\text{ex 12}} \quad |2x + 3| = 19$$

$$2x + \underset{-3}{-3} = \underset{-3}{19}$$

$$2x = 16$$

$$x = 8$$

$$-2x - \underset{+3}{3} = \underset{+3}{19}$$

$$-2x = 22$$

$$x = -11$$

$$\underline{\text{ex 18}} \quad \left| \frac{2}{3}x - 1 \right| = 5$$

$$\frac{2}{3}x - 1 = 5$$

$$\frac{3}{2} \cdot \frac{2}{3}x = 6 \cdot \frac{3}{2}$$

$$x = 9$$

$$\text{or } -\frac{2}{3}x + 1 = 5$$

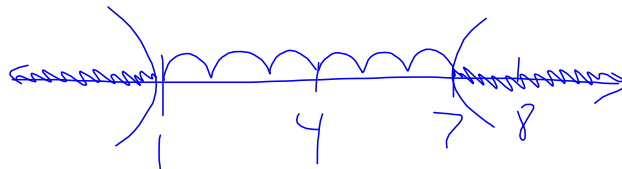
$$\left(\frac{-3}{2}\right)\left(-\frac{2}{3}\right)x = \cancel{4} \left(\frac{-3}{2}\right)$$

$$x = -6$$

ex 22 $|.04x - 3| = 5.96$

$$\begin{array}{l}
 .04x - 3 = 5.96 \quad \text{or} \quad -.04x + 3 = 5.96 \\
 \quad \quad \quad +3 \quad +3 \qquad \qquad \qquad \quad \quad \quad -3 \quad -3 \\
 .04x = 8.96 \qquad \qquad \qquad \quad \quad \quad -.04x = 2.96 \\
 x = 224 \qquad \qquad \qquad \qquad \qquad \quad \quad \quad x = -74
 \end{array}$$

ex $|x - 4| > 3$
 #s whose dist from 4 is greater than 3



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

$$|x - 4| > 3$$

$$\begin{array}{r} x - 4 > 3 \\ +4 \quad +4 \end{array}$$

$$x > 7$$

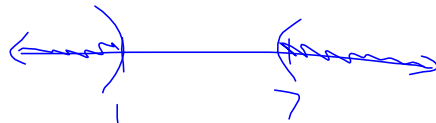
$$-(x - 4) > 3$$

$$\begin{array}{r} -x + 4 > 3 \\ -4 \quad -4 \end{array}$$

$$\begin{array}{r} -x > -1 \\ \frac{-1}{-1} \quad \frac{-1}{-1} \end{array}$$

$$x < 1$$

or

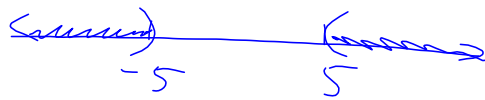


$$(-\infty, 1) \cup (7, \infty)$$

ex24 $|x| > 5$

$$-x > 5$$

$$x > 5 \quad \text{or} \quad x < -5$$



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

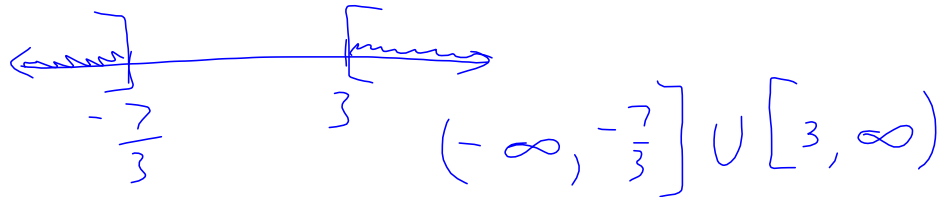
ex 28 $|3r - 1| \geq 8$

$$3r - 1 \geq 8 \quad \text{or} \quad -3r + 1 \geq 8$$

$$\begin{array}{l} +1 \\ +1 \end{array} \qquad \qquad \qquad \begin{array}{l} -1 \\ -1 \end{array}$$

$$3r \geq 9 \qquad \qquad \qquad -3r \geq 7$$

$$r \geq 3 \qquad \qquad \qquad r \leq -\frac{7}{3}$$



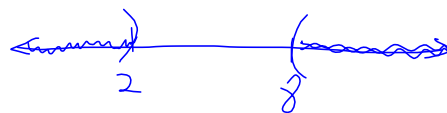
ex 32 $|5 - x| > 3$

$$5 - x > 3 \quad \text{or} \quad -5 + x > 3$$

$$\begin{array}{l} -5 \\ -5 \end{array} \qquad \qquad \qquad \begin{array}{l} +5 \\ +5 \end{array}$$

$$\begin{array}{l} -x > -2 \\ -1 \quad -1 \\ x < 2 \end{array}$$

$$x > 8$$



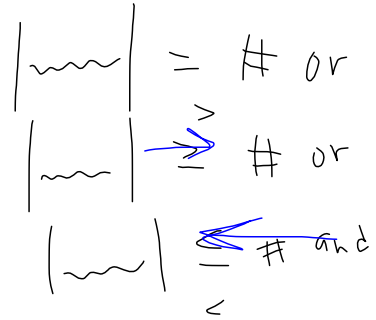
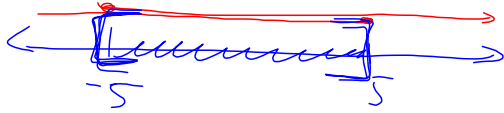
$(-\infty, 2) \cup (8, \infty)$

$8 \in x$



ex 38 $|x| \leq 5$ $|x - 0| \leq 5$

$x \leq 5$ and $-x \leq 5$
 $x \leq 5 \cap x \geq -5$



ex 42 $|3r - 1| < 8$

$3r - 1 < 8$ and $-3r + 1 < 8$
 $+1$ $+1$ -1 -1

$3r < 9$

$r < 3$

$-3r < 7$

$r > -\frac{7}{3}$



$(-\frac{7}{3}, 3)$

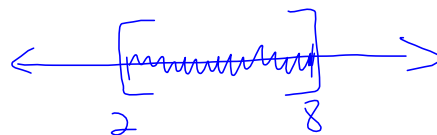
$$\underline{\text{ex46}} \quad |5 - x| \leq 3$$

$$\begin{array}{r} 5 - x \leq 3 \\ -5 \quad -5 \end{array} \quad \text{and} \quad \begin{array}{r} -5 + x \leq 3 \\ +5 \quad +5 \end{array}$$

$$-x \leq -2$$

$$x \geq 2$$

$$x \leq 8$$



$$[2, 8]$$

$$\underline{\text{ex68}} \quad |x| + 3 = 10$$

$$\begin{array}{r} -3 \quad -3 \end{array} \quad |x| = 7$$

$$x = 7 \quad \text{or} \quad -x = 7$$

$$x = -7$$

ex 70

$$|x+5| - 2 = 12$$

$$\quad \quad \quad +2 \quad +2$$

$$|x+5| = 14$$

$$|x - (-5)| = 14$$

$$x + 5 = 14 \quad \text{or} \quad -x - 5 = 14$$

$$x = 9$$

$$-x = 19$$

$$x = -19$$

ex 74

$$|x-2| - 3 \leq 4$$

$$\quad \quad \quad +3 \quad +3$$

$$|x-2| \leq 7$$

$$x - 2 \leq 7 \quad \text{and} \quad -x + 2 \leq 7$$

$$x \leq 9$$

$$-x \leq 5$$

$$x \geq -5$$

$$\underline{\text{ex 80}} \quad |7x + 12| = |x - 8|$$

$$\begin{array}{r} 7x + 12 \\ -x \end{array} = \begin{array}{r} x - 8 \\ -x \end{array} \quad \text{or} \quad \begin{array}{r} -7x - 12 \\ -x + 12 \end{array} = \begin{array}{r} x - 8 \\ -x + 12 \end{array}$$

$$\begin{array}{r} 6x + 12 \\ -12 \end{array} = \begin{array}{r} -8 \\ -12 \end{array}$$

$$6x = -20$$

$$x = \frac{-20}{6} = \frac{-10}{3}$$

$$-8x = 4$$

$$x = -\frac{1}{2}$$

$$\underline{\text{ex 84}} \quad |13x| = |2x + 1|$$

$$13x = 2x + 1$$

$$11x = 1$$

$$x = \frac{1}{11}$$

$$13x = -2x - 1$$

$$15x = -1$$

$$x = -\frac{1}{15}$$