9.1

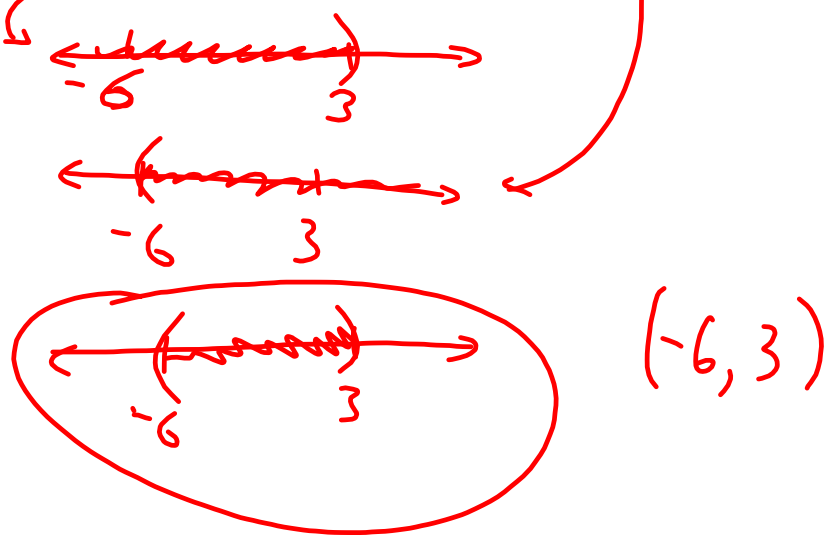
ex $x < 3$ and $x > -6$

< or >

( )

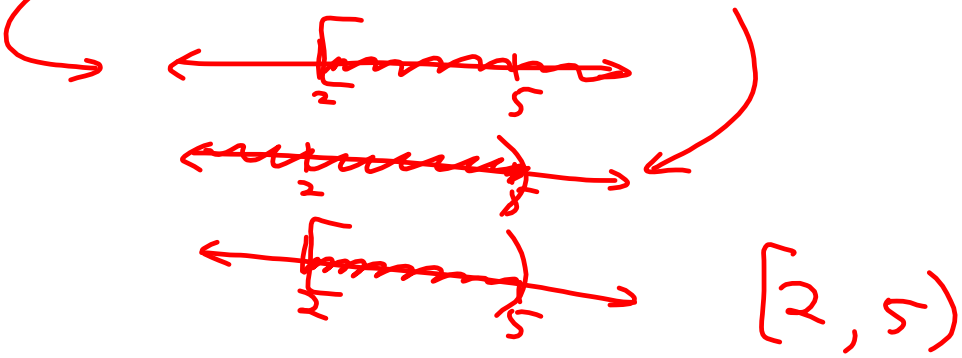
≤ or ≥

[ ]



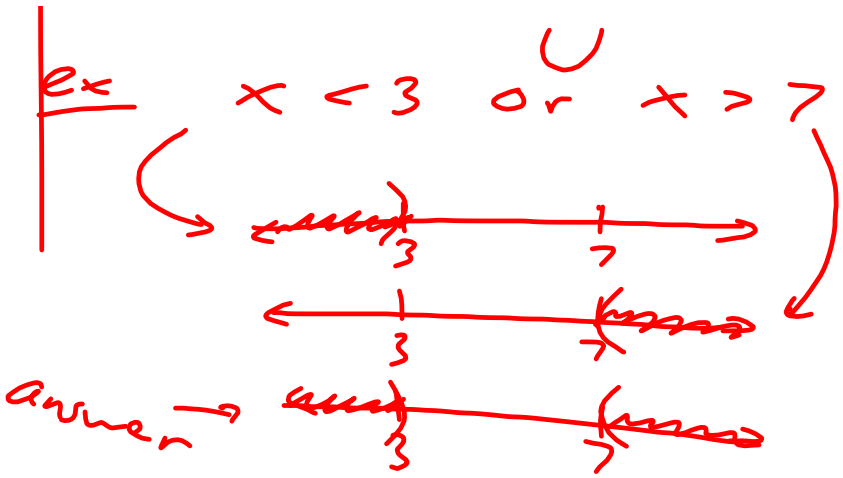
$(-6, 3)$

ex $x \geq 2$ and $x < 5$ — And



$[2, 5)$

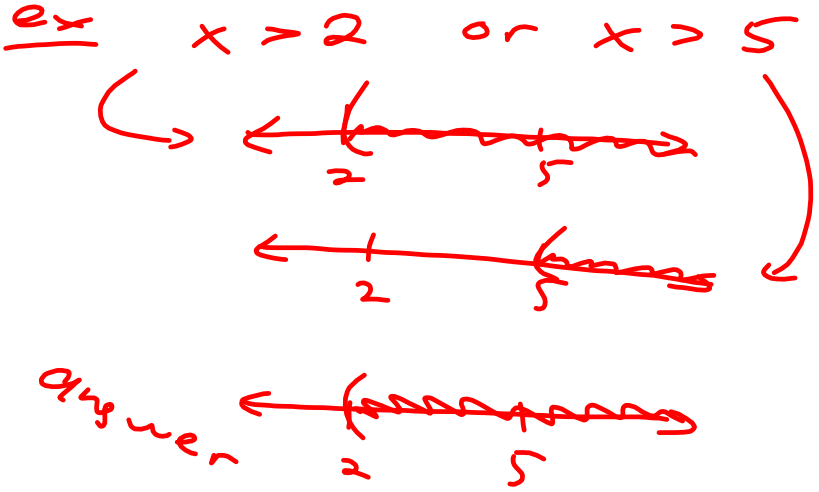
ex $x < 3$ or $x > 7$



answer

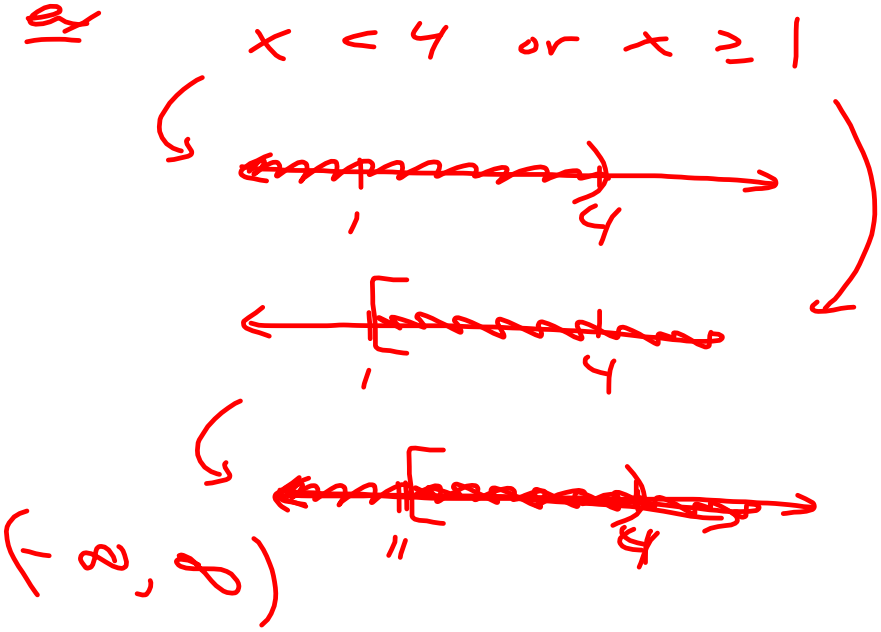
$(-\infty, 3) \cup (7, \infty)$

ex $x > 2$ or $x > 5$



answer

$(2, \infty)$

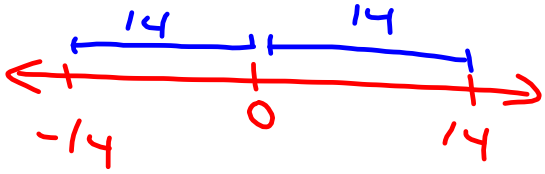


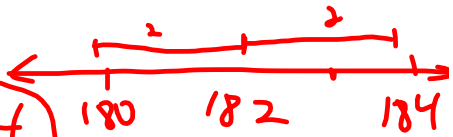
9.2 ex6 $|x| = 14$

$x = 14$ $\quad -x = 14$

$x = -14$

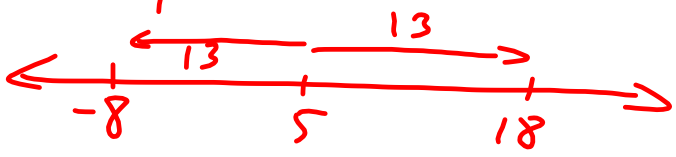
$|x - 0| = 14$ from distance





$|x - 182| \leq 2$

ex 10 $|x-5| = 13$



$x = -8$ or $x = 18$

$|x+5|$

$|x-(-5)|$

$x - 5 = 13$

$+5 \quad +5$

$x = 18$

$-(x-5) = 13$

$-x + 5 = 13$

$-5 \quad -5$

$-x = 8$

$x = -8$

ex 12 $|2x+3| = 19$

$2x + 3 = 19$

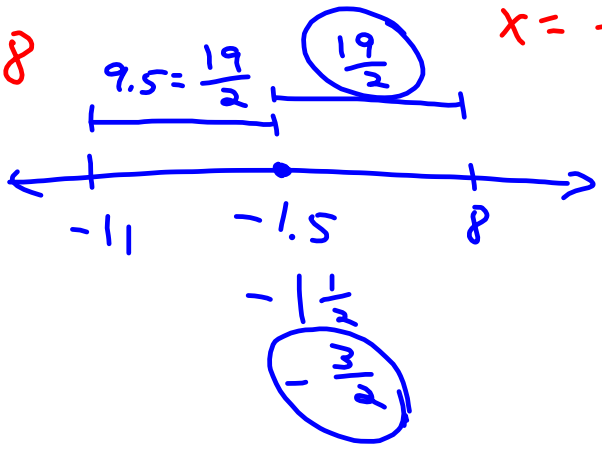
$2x = 16$

$x = 8$

$-2x - 3 = 19$

$-2x = 22$

$x = -11$



ex 20 $\left|2-\frac{5}{2}x\right| = 14$

$2-\frac{5}{2}x = 14$

$-\frac{5}{2}x = 12$

$-5x = 24$

$x = -\frac{24}{5}$

$-2+\frac{5}{2}x = 14$

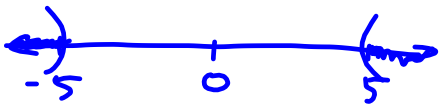
$\frac{5}{2}x = 16$

$5x = 32$

$x = \frac{32}{5}$

ex 24 $|x| > 5$ $|x-0| > 5$

$x > 5$ $\frac{-x}{-1} > \frac{5}{-1}$



or $x < -5$

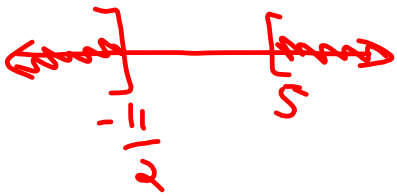
$(-\infty, -5) \cup (5, \infty)$

ex 30 $|4x+1| \geq 21$

$4x+1 \geq 21$ $\quad -4x-1 \geq 21$

$4x \geq 20$ $\quad -4x \geq 22$

$x \geq 5$ or $x \leq -\frac{22}{4}$ or $-\frac{11}{2}$



$(-\infty, -\frac{11}{2}] \cup [5, \infty)$

ex 38 $|x| \leq 5$

$x \leq 5$ and $-x \leq 5$

$x \geq -5$

$-5 \leq x \leq 5$

these are the same thing

$|x-0| \leq 5$

$|x| \leq 5$ $|x| < 5$

and

less than

$|x| \geq 5$ $|x| > 5$

or

greater than

AND

$B < D \ldots M \leq Q \ldots Z$

OR

$> \geq$

ex 2 $|3r - 1| < 8$

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

$3r < 9$ $-3r < 7$

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

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

ex 68 $|x| + 3 = 10$

$-3 \quad -3$

$|x| = 7$

$-x = 7$

$x = 7 \quad x = -7$

ex 72 $|6x - 1| - 2 > 6$

$+2 \quad +2$

$|6x - 1| > 8$

$6x - 1 > 8$ or $-6x + 1 > 8$

$6x > 9 \qquad -6x > 7$

$x > \frac{3}{2} \qquad x < -\frac{7}{6}$

$(-\infty, -\frac{7}{6}) \cup (\frac{3}{2}, \infty)$

ex 78 $|.5x - 3.5| + .2 \geq .6$

$-.2 \quad -.2$

$|.5x - 3.5| \geq .4$

$.5x - 3.5 \geq .4$ or $-.5x + 3.5 \geq .4$

$.5x \geq 3.9$ $\quad -.5x \geq -3.1$

$x \geq \frac{39}{5}$ $\quad x \leq \frac{31}{5}$

$(-\infty, \frac{31}{5}] \cup [\frac{39}{5}, \infty)$

ex 80 $|7x+12| = |x-8|$

$7x + 12 = x - 8$ $\quad -7x - 12 = x - 8$

$6x = -20$ $\quad -8x = 4$

$x = \frac{-20}{6}$ $\quad x = -\frac{4}{8} = -\frac{1}{2}$

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

ex 84 $|13x| = |2x+1|$

$13x = 2x+1$ $\quad -13x = 2x+1$

$11x = 1$ $\quad -15x = 1$

$x = \frac{1}{11}$ $\quad x = -\frac{1}{15}$

ex 90 $|13x+1| \leq -3$

impossible

no soln.

ex 96 $|x+9| > -3$

always true

all real #s

$(-\infty, \infty)$ $\quad \mathbb{R}$

ex100 $|7x+4| = 0$ $|x-2| = 0$

$7x+4=0$ $-7x-4=0$

$7x=-4$ $-7x=4$

$x=\frac{-4}{7}$ $x=\frac{-4}{7}$