

Study:

Solutions on the website for C2

"Context" is robbing many of 2 pts on every homework. "Context" for ALL of S2.7 consists of the SINGLE SENTENCE:

#s 1-64: Solve, graph, and give the solution set in interval notation for each inequality.

§ 2.7 Discuss homework

(12) $|8x-3| < -2$ Never. $\boxed{\emptyset}$

(22) $|4x-11| > -1$ Always $\boxed{(-\infty, \infty)}$

(65) $|2x-3| < 7$

$$\begin{array}{r} 2x-3 < 7 \quad \text{and} \quad 2x-3 > -7 \\ +3 = +3 \qquad \qquad \qquad +3 = +3 \\ \hline \end{array}$$

$$2x < 10$$

$$\frac{2x}{2} < \frac{10}{2}$$

$$\underline{x < 5}$$

AND

$$2x > -4$$

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

$$\underline{x > -2}$$

on web-page, MAGIC!
The "2" turned into a "7".



$$\boxed{x \in (-2, 5)}$$

Q6

$$|2x - 3| > 7$$

$$2x - 3 > 7$$

OR

$$2x - 3 < -7$$

$$\underline{+3 = +3}$$

$$\underline{+3 = +3}$$

$$2x > 10$$

$$2x < -4$$

$$x > \frac{10}{2} = 5$$

$$x < -\frac{4}{2} = -2$$

$$x > 5$$

OR

$$x < -2$$



$$x \in (-\infty, -2) \cup (5, \infty)$$

$$|\text{☺}| > 7$$

$$\text{☺} > 7$$

OR

$$\text{☺} < -7$$

$$|\text{☺}| < 7$$

$$\text{☺} < 7$$

AND

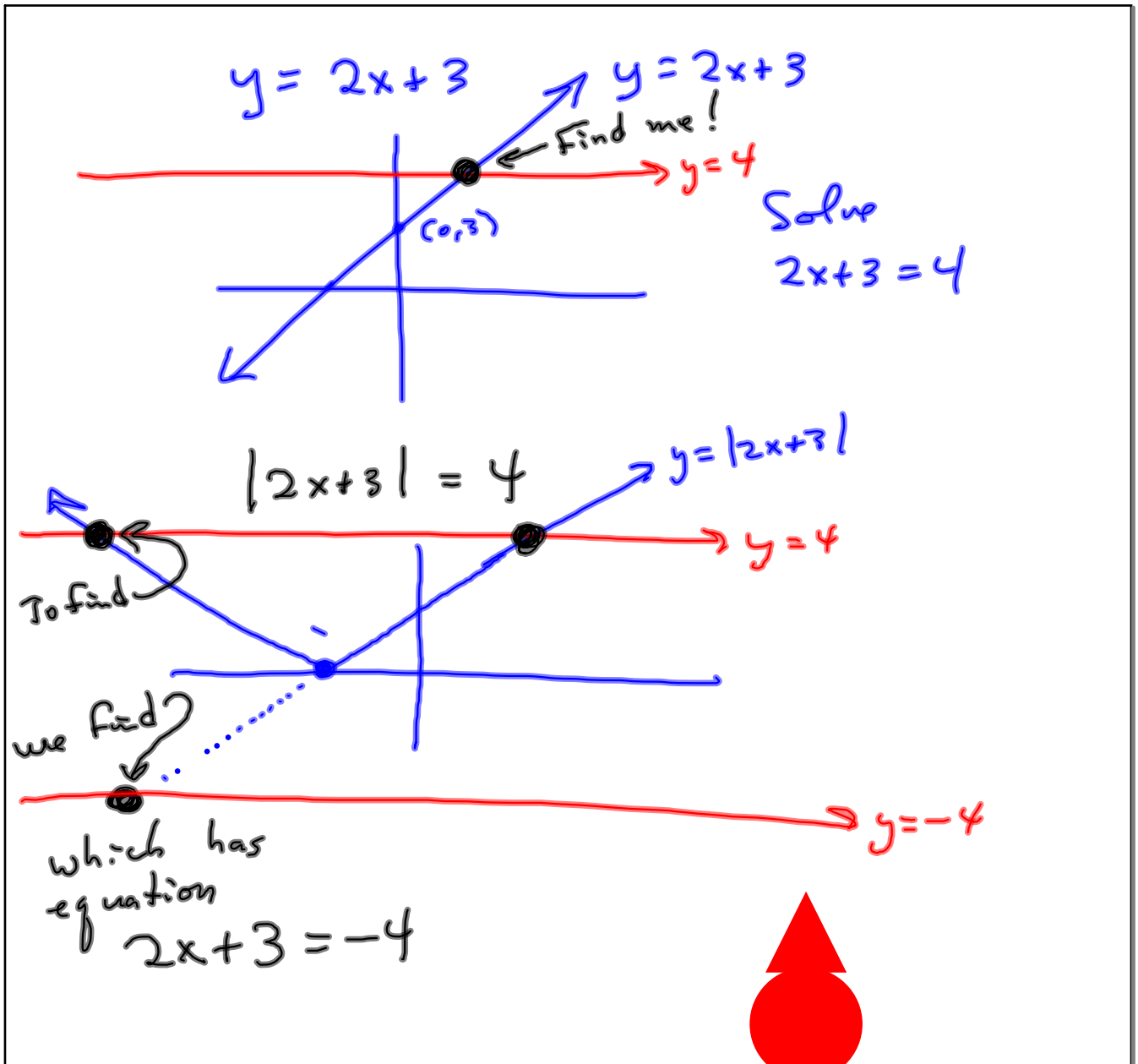
$$\text{☺} > -7$$

$$|\text{☺}| = 7$$

$$\text{☺} = 7$$

OR

$$\text{☺} = -7$$



$$(74) \quad 8 + |5x - 3| \geq 11$$

$$\underline{-8 \qquad \qquad \qquad = -8}$$

$$|5x - 3| \geq 3$$

$$5x - 3 \geq 3$$

OR

$$5x - 3 \leq -3$$

$$5x \geq 6$$

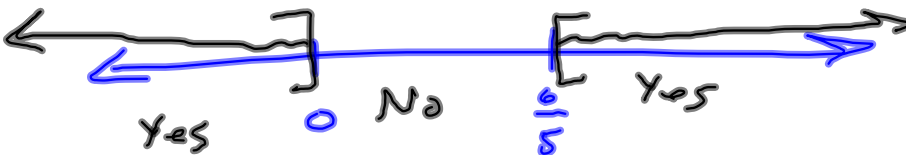
$$5x \leq 0$$

$$x \geq \frac{6}{5}$$

OR

$$x \leq \frac{0}{5} = 0$$

$$x \leq 0$$



$$\boxed{(-\infty, 0] \cup \left[\frac{6}{5}, \infty\right)}$$

(77)

$$|x + 11| = -1$$

$$\boxed{\emptyset}$$

§2.6
#8

$$\left| \frac{n}{3} + 2 \right| = 4$$

$$\frac{n}{3} + 2 = 4 \quad \text{OR} \quad \frac{n}{3} + 2 = -4$$

$$\underline{-2 = -2}$$

$$\begin{array}{r} \frac{n}{3} + 2 = -4 \\ -2 = -2 \\ \hline \frac{n}{3} = -6 \end{array}$$

$$\frac{n}{3} = 2$$

$$3\left(\frac{n}{3}\right) = 3(-6)$$

$$3\left(\frac{n}{3}\right) = 3(2)$$

$$n = 6$$

OR

$$n = -18$$

$$n \in \{-18, 6\}$$

§ 2.6
#8

$$\left| \frac{n}{3} + 2 \right| = 4$$

$$3\left(\frac{n}{3} + 2\right) = n + 6$$

$$\frac{n}{3} + 2 = 4$$

or

$$\frac{n}{3} + 2 = -4$$

$$\text{LCD} = 3$$

$$3\left(\frac{n}{3}\right) + 3(2) = 3(4) \quad \text{or} \quad 3\left(\frac{n}{3}\right) + 3(2) = 3(-4)$$

$$n + 6 = 12$$

or

$$n + 6 = -12$$

$$\underline{n = 6}$$

or

$$\underline{n = -18}$$

$$n \in \{-18, 6\}$$

Get your

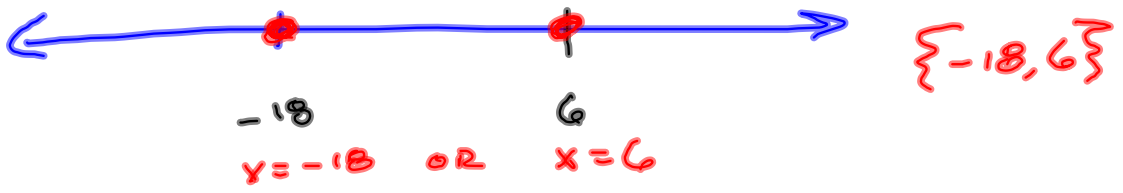
()'s

[]'s and

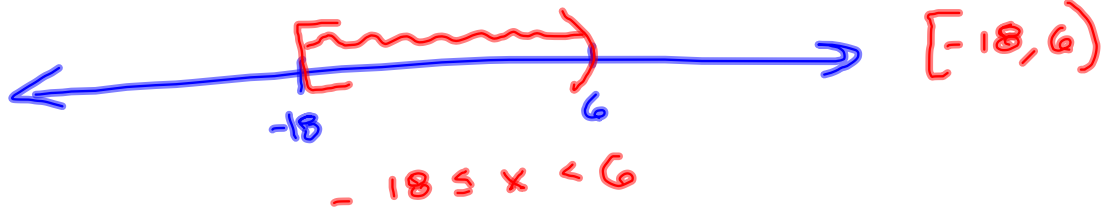
{ }'s straight.

Get your
delimiters
straight.

Set con-
taining a
few discrete points.



$\{-18, 6\}$



$[-18, 6)$

$x \leq -18$ OR $x > 6$

Red arrows point left from $x \leq -18$ and right from $x > 6$. The word "OR" is circled in red.



$(-\infty, -18] \cup (6, \infty)$

The entire expression is enclosed in a red rectangular box.

$$\left| \frac{2r-6}{5} \right| = |-2| = 2$$

$$\left| \frac{2r-6}{5} \right| = 2$$

$$\frac{2r-6}{5} = 2$$

OR

$$\frac{2r-6}{5} = -2$$

$$\textcircled{5} \left(\frac{2r-6}{\textcircled{5}} \right) = 5(2)$$

LCD = 5

$$\textcircled{5} \left(\frac{2r-6}{\textcircled{5}} \right) = 5(-2)$$

$$2r-6 = 10$$

$$2r = 16$$

$$r = \frac{16}{2} = 8$$

$$r = 8$$

$$2r-6 = -10$$

$$2r = -4$$

$$r = -\frac{4}{2} = -2$$

$$r = -2$$

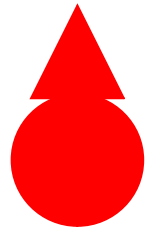
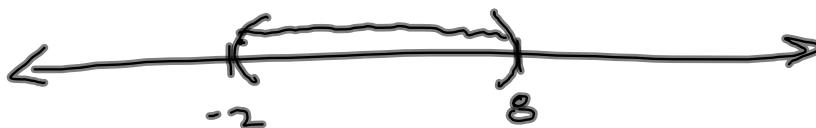
OR

$$r \in \{-2, 8\}$$



Compare to an interval:

$(-2, 8)$ is much different.



5. (5 pts) $\frac{x+1}{8} - \frac{2-x}{3} = \frac{5}{6}$

$$8 = 2 \cdot 2 \cdot 2$$

$$3 = 3$$

$$6 = 2 \cdot 3$$

$$\text{LCD} = 2 \cdot 2 \cdot 2 \cdot 3$$

$$\overset{3}{\cancel{24}} \left(\frac{x+1}{\cancel{8}} \right) - \overset{8}{\cancel{24}} \left(\frac{2-x}{\cancel{3}} \right) = \overset{4}{\cancel{24}} \left(\frac{5}{\cancel{6}} \right)$$

$$3(x+1) - 8(2-x) = 4(5)$$

$$3x + 3 - 16 + 8x = 20$$

$$11x - 13 = 20$$

$$11x = 33$$

$$x = \frac{33}{11} = 3$$

$$x = 3$$

I can do a job in 5 hrs.

Jim can do it in 3 hours.

I start at noon.

Jim starts at 1pm.

When are we done, if we're working together on the same job?

KEY: $\left(\begin{array}{l} \text{How much of} \\ \text{job done per} \\ \text{one hour} \end{array} \right) \left(\begin{array}{l} \text{number of} \\ \text{hours} \end{array} \right) = \begin{array}{l} \text{How much} \\ \text{of job} \\ \text{is done.} \end{array}$

$$\left(\frac{\text{job}}{\text{hr}} \right) (\text{hr}) = \text{job}$$

Let x = the amt of time I spend on the job (in hours).

Then $\frac{1}{5}x + \frac{1}{3}(x-1) = 1$ job done.

$x-1$ = # of hrs the lazy bum Jim worked.

$$\text{LCD} = 15$$

$$(15)\left(\frac{1}{5}x\right) + 15\left(\frac{1}{3}(x-1)\right) = 15(1)$$

$$3x + 5(x-1) = 15$$

$$3x + 5x - 5 = 15$$

$$8x = 20$$

$$x = \frac{20}{8} = \frac{5}{2} = 2.5 \text{ hours.}$$

So, we're done @ 2:30 pm.

