

Good morning: check hw answers, have questions ready

1)  $\left\{\frac{2}{3}, 5\right\}$

2)  $\left\{\frac{4}{7}, -4\right\}$

3)  $\left\{-\frac{8}{3}, 4\right\}$

4)  $\left\{\frac{2}{3}, -6\right\}$

5)  $\left\{-\frac{4}{5}, -4\right\}$

6)  $\left\{\frac{2}{5}, -2\right\}$

7)  $\{-2, 4\}$

8)  $\{-7, -3\}$

4.)

$$2r^2 + 8r - 4 = 8 - 8r - r^2$$

$$+ r^2 + 8r - 8 \quad - 8 + 8r + r^2$$


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$3r - 2 = 0$

$r + 6 = 0$

$(3r)^2 + 16r - 12 = 0$

$(3r - 2)(r + 6) = 0$

12:  $\begin{array}{l} 1, 12 \\ 2, 6 \\ \hline 3, 4 \end{array}$   $\leftarrow \begin{array}{l} 3, 12 \\ 1, 36 \\ 6, 6 \\ \hline 2, 18 \end{array}$

Last test: Thursday

- Last day to reassess: 5/22

Are you ready for today?

$$5x^2 + 31x - 28 = 0$$

$$(5x - 4)(x + 7) = 0$$

$$5x - 4 = 0$$

$$x = 4/5$$

$$x + 7 = 0$$

$$x = -7$$

28: 1, 28  
2, 14  
4, 7

need: 31

20, 7  
4, 35

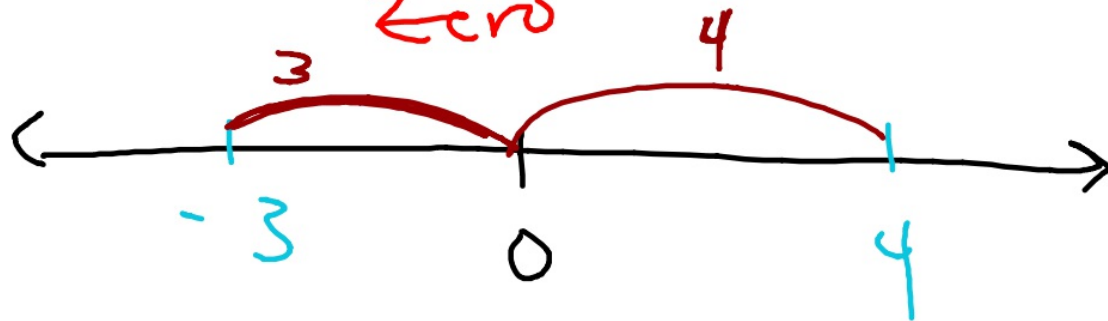
Absolute Value

$$|-3| \quad |4|$$

↓                      ↓  
→ 3                      → 4

What do these mean?

distance from  
zero



$$|-10x + 6| + \cancel{5} = 9$$

$\underline{\quad -5 \quad -5}$

$$|\underline{-10x + 6}| = 4$$

1. Isolate absolute value term
2. Set argument of abs. value equal to  $\pm$  the other side
3. Solve each new equation

$$\begin{aligned} -10x + \cancel{6} &= 4 \\ \underline{-6 \quad -6} & \\ -10x &= -2 \\ \underline{-10} & \quad \underline{+10} \\ x &= \frac{2}{10} \rightarrow \frac{1}{5} \end{aligned}$$

$$\begin{aligned} -10x + \cancel{6} &= -4 \\ \underline{-6 \quad -6} & \\ -10x &= -10 \\ x &= 1 \end{aligned}$$

$$|-9x + 4| - 2 = 74$$

+12   +2

$$|-9x + 4| = 76$$

$$\begin{array}{r} -9x + 4 = 76 \\ \underline{-4 \quad -4} \\ -9x = 72 \end{array}$$

$$-9x = 72$$

$$x = -8$$

$$\begin{array}{r} -9x + 4 = -76 \\ \underline{-4 \quad -4} \\ -9x = -80 \end{array}$$

$$-9x = -80$$

$$x = \frac{80}{9}$$

$$-2|5x + 6| - 8 = -16$$

+8   +8

$$\cancel{-2|5x + 6|} = \frac{-8}{-2}$$

$$|5x + 6| = 4$$

$$5x + 6 = 4$$

$$5x = -2$$

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

$$5x + 6 = -4$$

$$5x = -10$$

$$x = -2$$

Pick one!

$$|n + 1| + 6 = 9$$

$$n = 2, -4$$

$$10 + |-5 + m| = 13$$

$$m = 2, 8$$

$$\cancel{2} - 8 |-2p - 6| = -30$$

$$\cancel{-8} |-2p - 6| = \frac{-32}{\cancel{-8}}$$

$$|-2p - 6| = 4$$

$$-2p - 6 = 4$$

$$p = -5$$

$$-2p - 6 = -4$$

$$p = -1$$

$$4 |-9v - 6| + 7 = 19$$



## Returning to quadratics...

Find all real solutions.

$$Ax^2 + Bx + C = 0$$
$$x^2 - 6x - 10 = 0$$

$$(x \quad)(x \quad) = 0 \quad 10: 1, 10 \quad 2, 5 \quad (?!) \quad \text{---}$$

"Complete the Square"

$$x^2 - 6x - 10 = 0$$
$$\quad \quad \quad +10 \quad +10$$

$$x^2 - 6x = 10$$

$$x^2 - 6x + 9 = 10 + 9$$
$$\quad \quad \quad \left(\frac{-6}{2}\right)^2 = (-3)^2 = 9$$

$$(x-3)(x-3) = 19$$

$$\sqrt{(x-3)^2} = \sqrt{19}$$

$$x-3 = \pm\sqrt{19}$$

$$x = 3 \pm \sqrt{19}$$

① Isolate the C term.

\* ② Take half of B, square it, then add to both sides.

③ Factor

④ Simplify.

⑤ Solve for x.

Do you get it?

$$x^2 - 8x + 13 = 0$$

$$x^2 - 8x = -13$$

$$\left(\frac{-8}{2}\right)^2 = \underline{\underline{(-4)^2 = 16}}$$

$$x^2 - 8x + 16 = -13 + 16$$

$$(x - 4)(x - 4) = 3$$

$$(x - 4)^2 = 3$$

$$x - 4 = \pm\sqrt{3} \rightarrow$$

$$x = 4 \pm \sqrt{3}$$



How does this connect to geometry?

Center and radius of this circle equation?

$$(x-4)^2 + (y+2)^2 = 81$$

Center and radius of this circle equation?

$$x^2 - 8x + y^2 - 6y + 9 = 25$$

Center and radius of this circle equation?

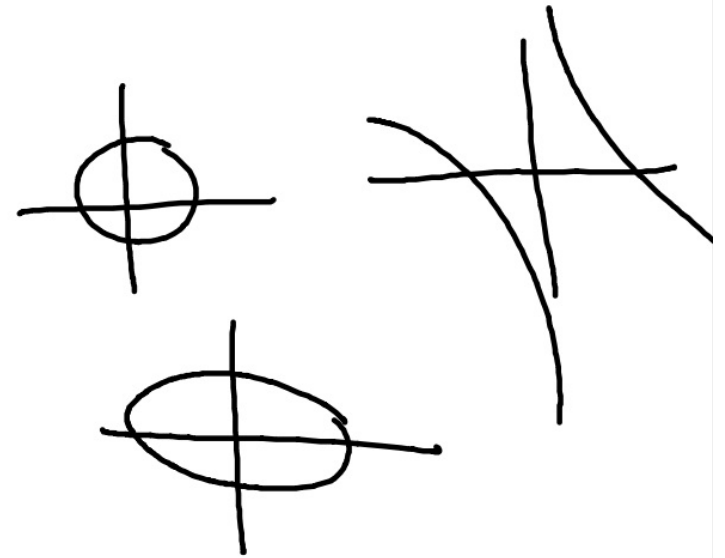
$$x^2 - 8x + y^2 - 6y + 9 = 25$$

$$x^2 - 8x + y^2 - 6y = 16$$

$$x^2 - 8x + 16 + y^2 - 6y + 9 = 16 + 16 + 9$$

$$(x-4)(x-4) + (y-3)(y-3) = 4 + 16 + 9$$

$$(x-4)^2 + (y-3)^2 = 29$$



## Inequalities

Find all numbers that satisfy

$$\begin{array}{r} 15 \leq 5x + 10 < 45 \\ \underline{-10 \quad -10 \quad -10} \end{array}$$

$$\frac{5}{5} \leq \frac{5x}{5} < \frac{35}{5}$$

$$1 \leq x < 7$$

aka.  $[1, 7)$

Graph the solution set

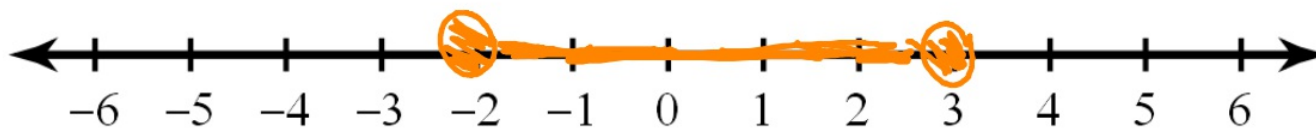


$$24 \geq 5n + 9 \geq -1$$

$$\frac{15}{5} \geq \frac{5n}{5} \geq \frac{-10}{5}$$

$$3 \geq n \geq -2$$

$$-2 \leq n \leq 3$$



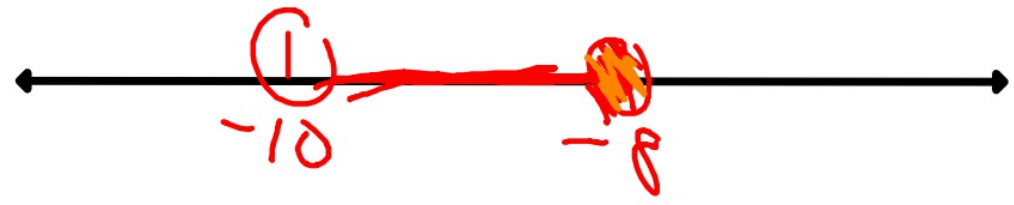
USE  
CAUTION

$$63 \leq -9 - 9x < 81$$

$$\frac{72}{-9} \leq \frac{-9x}{-9} < \frac{90}{-9}$$

$$-8 \geq x > -10$$

Divide/mult. by neg?  
FLIP THE SIGN!



HW

Last practice test!

Skip #1, 6

solutions and help videos at [mgeo.weebly.com](http://mgeo.weebly.com)

Test is Thursday

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