

Day 8

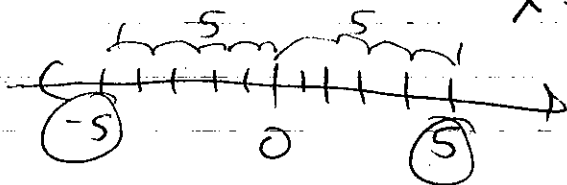
1/28 p.1

1.5 Absolute Value Equations and Inequalities

$$|x| = 5$$

$$x = 5$$

$$x = -5$$



$$|5| = 5$$

$$|-5| = 5$$

$$|x+2| = 3$$

$$x = 1$$

$$x = -5$$

$$x+2 = 3$$

$$x+2 = -3$$

2 solutions for every abs. value eq.
to solve \rightarrow 1st: isolate the abs. value bars

If anything is outside the bars being added or multiplied you need to move those #'s to the other side 1st.

Cannot distribute to abs. value bars

$$2|3x-1| + 5 = 33$$

$$\frac{2}{2}|3x-1| = \frac{28}{2}$$

$$|3x-1| = 14$$

$$3x-1 = 14$$

$$3x-1 = -14$$

$$\frac{3x}{3} = \frac{15}{3}$$

$$\frac{3x}{3} = \frac{-13}{3}$$

2nd: make 2 eqs. w/o the bars - one the same w/o bars and the other will equal the opposite

$$x = 5$$

$$x = -\frac{13}{3}$$

(ex)

$$\cancel{4} - 2|x+9| = -5$$

$$\frac{-2}{-2}|x+9| = \frac{-9}{-2}$$

$$|x+9| = 4.5$$

$$x+9 = 4.5$$
$$\cancel{+9} \quad \cancel{-9}$$

$$x = -4.5$$

$$x+9 = -4.5$$
$$\cancel{+9} \quad \cancel{-9}$$

$$x = -13.5$$

An extraneous solution is a solution of an eq. derived from an original eq. that is NOT a solution to the original eq.

(ex)

$$|2x+3| = 3x+2$$

$$2x+3 = 3x+2$$
$$\cancel{-3x} \quad \cancel{-3} \quad \cancel{-3x} \quad \cancel{-3}$$

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

$$x = 1$$

the solution that works

$$2x+3 = -3x-2$$
$$\cancel{+3x} \quad \cancel{+3} \quad \cancel{+3x} \quad \cancel{-3}$$

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

$$x = -1$$

extraneous solution

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p.2

$$\textcircled{\text{ex}} \quad |4x-6| = -10$$

No Real Solution

$$\textcircled{\text{ex}} \quad \frac{-1}{-1} |4x-6| = \frac{-10}{-1}$$

$$|4x-6| = 10$$

$$4x-6 = 10$$

$$4x-6 = -10$$

$$\textcircled{\text{ex}} \quad |3x-4| = -4x-1$$

$$3x-4 = -4x-1$$

$$3x-4 = 4x+1$$

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

$$\frac{7x}{7} = \frac{3}{7}$$

$$\boxed{x = \frac{3}{7}}$$

$$\begin{array}{r} 3x = 4x + 5 \\ -4x \quad -4x \\ \hline \end{array}$$

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

$$\boxed{x = -5}$$

CW: p.36 (1-15)