## Section 1.8 Guided Notebook

## Section 1.8 Absolute Value Equations and Inequalities

- □ Work through Section 1.8 TTK
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- $\Box$  Work through Objective 1
- $\Box$  Work through Objective 2
- $\Box$  Work through Objective 3

### Section 1.8 Absolute Value Equations and Inequalities

## **1.8 Things To Know**

1. Solving Three-Part Inequalities in One Variable (Section 1.7) Try this one:  $-2 \le \frac{2-4x}{3} < 5$ . Watch the video to check your solution.

You will see in Section 1.8 that you will need to be able to set up and solve a three-part inequality.

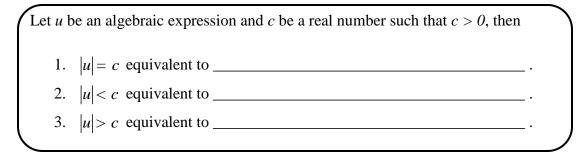
2. Solving Compound Inequalities in One Variable (Section 1.7) Try this one:  $x + 3 \le 1$  or 2x - 5 > 7. Watch the video to check your solution.

You will see in Section 1.8 that you will need to be able to set up and solve a compound inequality with "*or*".

#### An Introduction to Absolute Value

Read the introduction to Section 1.8 and watch the video that accompanies it and take notes here:

# Complete **Table 1** below: **Table 1 Absolute Value Equations and Inequality Properties**



Section 1.8 Objective 1 Solving an Absolute Value Equation Work through the video that accompanies Example 1 and take notes here: Solve |1-3x| = 4.

Note that the absolute value equation in Example 1 is in *standard form*. Make sure that you ALWAYS get your absolute value equations into *standard form* before solving the equation.

Work through the interactive video that accompanies Example 2 and take notes here:

Solve each absolute value equation.

a. 
$$-2|1-3x|+5=-9$$

b. 
$$\left| \frac{5x-1}{x+3} \right| = 11$$

c. 
$$|x^2 - x - 8| = 4$$

d. 
$$|\sqrt{2x+9} - x| = 3$$

Section 1.8 Objective 2 Solving an Absolute Value Inequalities Fill in the blanks. When we encounter an inequality of the form |u| < c where *c* is a positive constant, property \_\_\_\_\_ states that the inequality is equivalent to the three-part inequality \_\_\_\_\_.

Work through the video that accompanies Example 3 and take notes here: Solve  $|4x-3|+2 \le 7$ . Fill in the blanks.

When we encounter an inequality of the form |u| > c where c is a positive constant,

property	states that the inequality is equiv	alent to the compound
inequality		

Work through the video that accompanies Example 4 and take notes here: Solve |5x+1| > 3.

Work through the video that accompanies Example 5 and take notes here: Solve  $7 - 2|1 - 4x| \le -9$ .

Work through the interactive video that accompanies Example 6 and take notes here: Solve each of the following.

a. |3x - 2| = 0b. |x+6| = -4c.  $|7x + 5| \le 0$ d. |3-4x| < -6e. |8x - 3| > 0

f.  $|1 - 9x| \ge -5$