

Section 1.8

Section 1.8 Guided Notebook

Section 1.8 Absolute Value Equations and Inequalities

- Work through Section 1.8 TTK
- Work through Section 1.8 TTK
- Work through Objective 1
- Work through Objective 2
- 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: $-2 \leq \frac{2-4x}{3} < 5$. 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: $x + 3 \leq 1$ 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:

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Complete **Table 1** below:

Table 1 Absolute Value Equations and Inequality Properties

Let u be an algebraic expression and c be a real number such that $c > 0$, then

1. $|u| = c$ equivalent to _____ .
2. $|u| < c$ equivalent to _____ .
3. $|u| > c$ equivalent to _____ .

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

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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 $|4x - 3| + 2 \leq 7$.

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 equivalent 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 $7 - 2|1 - 4x| \leq -9$.

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

a. $|3x - 2| = 0$

b. $|x + 6| = -4$

c. $|7x + 5| \leq 0$

d. $|3 - 4x| < -6$

e. $|8x - 3| > 0$

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