Section 2.1 Guided Notebook

Section 2.1 The Rectangular Coordinate System

- ☐ Work through Section 2.1 TTK #1
- ☐ Work through Section 2.1 TTK #2
- ☐ Work through Section 2.1 TTK #3
- ☐ Work through Section 2.1 TTK #4
- ☐ Work through Objective 1
- ☐ Work through Objective 2
- ☐ Work through Objective 3
- ☐ Work through Objective 4

Section 2.1 The Rectangular Coordinate System

2.1 Things To Know

1. Simplifying Radical Expressions Using the Product Rule (Section R.3)

Can you simply the radical expression $\sqrt{12}$ or $\sqrt{50x^4y^3}$?   Work through the animation and video and then try working through a "You Try It" problem or refer to Section R.3.

2. Solving Rational Equations that Lead to Linear Equations (Section 1.1)

Solve the rational equation $\dfrac{2}{x+4} + \dfrac{1}{x-5} = \dfrac{5}{x^2 - x - 20}$. Watch the video to check your solution and then try working through a "You Try It" problem or refer to Section 1.1

Section 2.1

2.1 Things To Know

3. Solving Quadratic Equations Using the Square Root Property (Section 1.4)
    Solve the equation $(x- 1)^2 = 7$. Watch the video to check your
    solution and then try working through a "You Try It" problem or refer to Section 1.4.

4. Solving Equations Involving Radicals (Section 1.6)
    Solve the equation $\sqrt{x- 1}- 2 = x- 9$. Watch the video to check your
    solution and then try working through a "You Try It" problem or refer to Section 1.6

Read the introduction to Section 2.1 and write notes here:

Watch the animation seen on page 2.1-6. Draw a rectangular coordinate system and label the four quadrants. Then, plot the two ordered pairs seen in the animation.

Section 2.1 Objective 1 Plotting Ordered Pairs
Work through the video that accompanies Example 1 and write your notes here:
Plot the ordered pairs $(-2, 3), (0, 4), (2, 5)$ and $(4, 6)$ and state in which quadrant or on which axis each pair lies.

Section 2.1

What is the equation of the graph of the straight line that passes through the 4 ordered pairs from Example 1?

Section 2.1 Objective 2 Graphing Equations by Plotting Points
Work through the video that accompanies Example 2 and write your notes here:
Sketch the graph of $y = x^2 - 4x + 4$.

Work through the video that accompanies Example 3 and write your notes here:

Determine whether the following ordered pairs lie on the graph of the equation $x^2 + y^2 = 1$.

a. $(0, -1)$

b. $(1, 0)$

c. $\left(\frac{1}{3}, \frac{2}{3}\right)$

d. $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

Section 2.1

Section 2.1 Objective 3 Finding Intercepts of a Graph Given an Equation

What is the definition of the **intercepts of a graph**?

Fill in the blanks:
A y-intercept is the _____ of a point where a graph touches or crosses the
_____.

An x-intercept is the _____ of a point where a graph touches or crosses the
_____.

Complete the sentences below that describe how to algebraically find x- and y-intercepts.

Algebraically Finding x- and y-Intercepts Given an Equation in Two Variables

Finding x-intercepts: Set all values of the variable _____.

Finding y-intercepts: Set all values of the variable _____.

Work through the video that accompanies Example 4 and write your notes here:
Find the x- and y-intercepts of the graphs of the given equations.

a. $y = \dfrac{2x - 1}{x + 3}$

b. $\sqrt{x+2} + y = 3$

c. $(x-1)^2 + (y-3)^2 = 5$

Section 2.1

Section 2.1 Objective 4 Finding the Midpoint of a Line Segment Using the Midpoint Formula

Write down the **midpoint formula** here:

Work through the video that accompanies Example 5 and write your notes here:
Find the midpoint of the line segment whose endpoints are $(-3,2)$ and $(4,6)$.

Work through the video that accompanies Example 6 and write your notes here:
In geometry, it can be shown that four points in a plane form a parallelogram if the two diagonals of the quadrilateral formed by the four points bisect each other. Do the points $A(0,4)$, $B(3,0)$, $C(9,1)$, and $D(6,5)$ form a parallelogram?

Section 2.1 Objective 5 Finding the Distance Between Two Points Using the Distance Formula

Watch the video that accompanies Objective 5. Take notes below.

Write the **distance formula** here:

Work through the video that accompanies Example 7 and write your notes here:

Find the distance between the points $A(-1,5)$ and $B(4,-5)$.

Work through the video that accompanies Example 8 and write your notes here:

Verify that the points $A(3,-5)$, $B(0,6)$, and $C(5,5)$ form a right triangle.