**Review of Graphing Lines** (Chapter 4 in the Mth60/65 Textbook)

There are three basic techniques for graphing a line given its equation.

(1) **Graph by Point-Plotting (Section 4.1)**
- pick an x-value, plug this x-value into the equation, calculate y, and write as an ordered pair or point
- repeat until you have at least two points (3 or more is preferable)
- graph each point and draw a line that passes through each of the points

Example:// \( y = 3x - 2 \)

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
<th>(x, y)</th>
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(2) **Graph with the x- and y-intercepts (Section 4.2)**
(This technique works only if there is one of each intercept.)
- find the x-intercept \((x, 0)\) by setting \(y = 0\) in the equation and calculating \(x\).
- find the y-intercept \((0, y)\) by setting \(x = 0\) in the equation and calculating \(y\).
- graph the two points (the x-intercept and the y-intercept) and draw a line that passes through them.

Example:// \( 2x + 4y = 12 \)

(3) **Graph with the slope and the y-intercept (Section 4.4)**
When a linear equation has \(y\) isolated on one side of the equation, we say that the equation is in slope-intercept form, \( y = mx + b \), where \(m\) is the slope and \((0, b)\) is the y-intercept.
- graph the point (the y-intercept) first.
- use the slope (recall: slope is rise/run) to graph a second and a third point moving away from the y-intercept.
- draw a line that passes through the points.

Example:// \( y = \frac{1}{2}x + 2 \)
1. Use one of the three methods to graph the following:

\[ y = -\frac{3}{4}x + 2 \]  
\[ 3x - y = 6 \]  
\[ y = -4 \]

2. Find the slope, y-intercept, and equation of the following lines given their graphs.

\begin{align*}
\text{Slope} & \quad \text{y-intercept} \quad \text{Slope} \quad \text{y-intercept} \\
\text{Equation} & \quad \text{Equation}
\end{align*}

3. Find the equation of a line that goes through the points (-2, 3) and (1, -1).  
\text{(Section 4.5)}

(Hint: Find the slope and then use the Point-Slope Form of a Line to find the linear equation.)

Recall:  \[ m = \frac{y_2 - y_1}{x_2 - x_1} \]  
Point Slope Formula:  \[ y - y_1 = m(x - x_1) \]

4. Find the slope of the linear graph below. Write it in simplified form. Interpret the value.  
\text{(Section 4.3)}