4.5 Graph Using Slope-Intercept Form

Goal • Graph linear equations using slope-intercept form.

Your Notes

VOCABULARY

Slope-intercept form

Parallel

FINDING THE SLOPE AND *Y*-INTERCEPT OF A LINE

Words

A linear equation of the form $y = mx + b$ is written in

_____

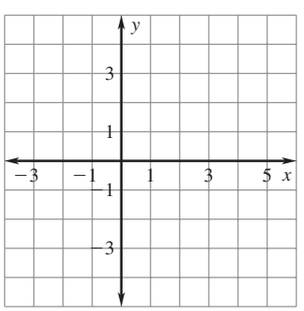
where ____ is the slope and ____ is the *y*-intercept of the equation's graph.

Symbols

$y = mx + b$

$y = 2x + 1$

Graph



Your Notes

Example 1 ***Identify slope and y-intercept***

Identify the slope and *y*-intercept of the line with the given equation.

a. $y = x + 3$ **b.** $-2x + y = 5$

Solution

a. The equation is in the form _____. So, the slope of the line is ___, and the *y*-intercept is ___.

b. Rewrite the equation in slope-intercept form by solving for ___.

$-2x + y = 5$ **Write original equation.**

$y =$ _____ **Subtract _____ from each side.**

The line has a slope of ___ and a *y*-intercept of ___.

✔ ***Checkpoint*** **Identify the slope and *y*-intercept of the line with the given equation.**

1. $y = 4x - 1$	**2.** $4x - 2y = 8$
3. $4y = 3x + 16$	**4.** $6x + 3y = -21$

Your Notes

Example 2 ***Graph an equation using slope-intercept form***

Graph the equation $4x + y = 2$.

Solution

Step 1 **Rewrite** the equation in slope-intercept form.

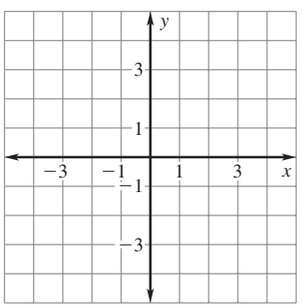
_____

Step 2 _____ the slope and the y-intercept.

$m =$ _____ $b =$ _____

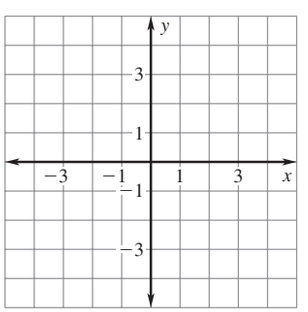
Step 3 _____ the point that corresponds to the y-intercept, (_____).

Step 4 **Use** the slope to locate a second point on the line. Draw a line through the two points.



✔ ***Checkpoint*** **Complete the following exercise.**

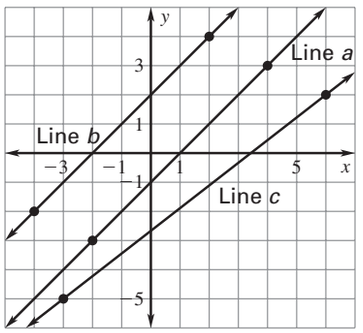
5. Graph the equation $-\frac{1}{2}x + y = 1$.



Your Notes

Example 3 ***Identify parallel lines***

Determine which of the lines are parallel.



Solution

Find the slope of each line.

Line *a*: $m = \dfrac{\square - 3}{\square - 4} = \dfrac{\square}{\square} =$ ___

Line *b*: $m = \dfrac{\square - 4}{\square - 2} = \dfrac{\square}{\square} =$ ___

Line *c*: $m = \dfrac{\square - 2}{\square - 6} = \dfrac{\square}{\square} =$ ___

Lines ___ and ___ have the same slope. They are parallel.

✔ ***Checkpoint*** **Complete the following exercise.**

6. Determine which lines are parallel.

Line *a*: through (2, 5) and (−2, 2)

Line *b*: through (4, 1) and (−3, −4)

Line *c*: through (2, 3) and (−2, 0)

Homework