Warm-Up Notes

MAT 100: Elementary Algebra

Fall 2026

Section 4.6 Find the Equation of a Line

Install — 10 minute lesson

Objectives of this Section

- Find an equation of the line given the slope and
- -intercept
- Find an equation of the line given the slope and a point
- Find an equation of the line given two points
- Find an equation of a line parallel to a given line
- Find an equation of a line perpendicular to a given line

Skills

Introduced in this section:

- **LIN.WE** — Writing the Equation of a Line

Also practiced: LIN.SP (Finding the slope given points), WRD.NM (Naming the model).

Lesson

You can build the exact equation of a line out of surprisingly little information: a slope and one point, two points, or even someone else's line you need to match. Every one of those situations reduces to the same move once you know a slope and a point on the line, you plug them into $y - y_1 = m(x - x_1)$ and simplify. Today you'll practice recognizing what your "slope" and "point" are, no matter how they're disguised.

I do

Watch. Find the equation of the line with slope m $= -\frac{1}{3}$ that passes through the point $(-9, -8)$. Express the equation in slope-intercept form.

We do

Together. Find an equation of a line parallel to the given line and passing through the specified point. If the given line is vertical, give the vertical line through the point. Given line: $y = 1$; point $(3, -4)$.

You do

Your turn. Find the equation of the line containing the points (3,-2) and (-4,4). Write the equation in slope-intercept form.

Your turn. Find the equation of the line with slope $m = -\frac{3}{2}$ that passes through the point $(-4, -3)$. Express the equation in slope-intercept form.

Practice

1. Find the equation of the line with slope $m = \frac{5}{8}$ that passes through the point $(8, 3)$. Express the equation in slope-intercept form.

2. Find the equation of the line with slope $m = -\frac{5}{2}$ that passes through the point $(-8, -2)$. Express the equation in slope-intercept form.

3. Horizontal line containing the point $(-2, 5)$. Provide the equation in slope-intercept form.

4. Parallel to the line $x = -4$, containing the point $(-3, -5)$. Provide the equation

in slope-intercept form.