- *Goals:*
- *You will write equations for parallel and perpendicular lines.*

Slope – intercept form

- Equation: $y = mx + b$
- Variables: $m \rightarrow$ slope $b \rightarrow$ y-intercept

Point – slope form

- Equation: $y - y_1 = m(x - x_1)$
- Variables: $m \rightarrow$ slope $(x_1, y_1) \rightarrow$ point

Example 1 Write an equation in slope-intercept form of the line with slope -2 and y-intercept 4.

$y = -2x + 4$

Example 2 Write an equation in point-slope form of the line with slope $-\frac{3}{4}$ that contains (8, 1).

$y - 1 = -\frac{3}{4}(x - 8)$

Example 3: Change your answer from example 2 to slope-intercept form.

$y - 1 = -\frac{3}{4}x + 6$

$+1 \quad +1$

$y = -\frac{3}{4}x + 7$

Example 4: What if the question asked to write an equation in point-slope form of the line with a parallel slope? Perpendicular?

Same

slope $\rightarrow \frac{4}{3}$

Example 5: Write an equation in slope-intercept form for a line that goes through points (4,9) and (-2,0)

$\frac{9-0}{4-(-2)} = \frac{9}{6} = \frac{3}{2}$ m

$y - 0 = \frac{3}{2}(x - (-2))$

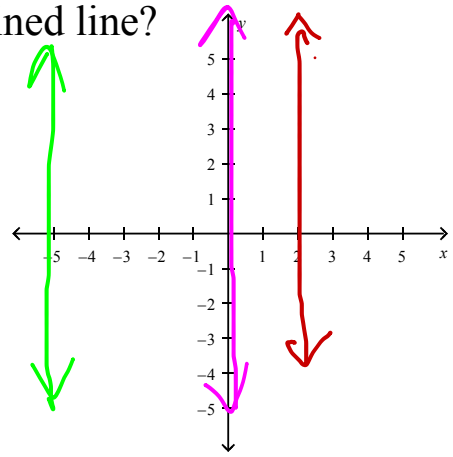
$y = \frac{3}{2}x + 3$

How do you write the equation of an undefined line?

$x=2$

$x=0$

$x=-5$



Extra questions:

Write the following equations in slope-intercept form:

1. A line that passes through the point $(4,-3)$ with a slope of -2.

$y-(-3)=-2(x-4)$

$y+3=-2x+8$

$y=-2x+5$

2. A line that is parallel to a line with a slope of $\frac{2}{3}$ and passes through the point $(6,-1)$.

$y-(-1)=\frac{2}{3}(x-6)$

$y+1=\frac{2}{3}x-4$

$y=\frac{2}{3}x-5$

3. A line that is perpendicular to a line with a slope of $\frac{2}{3}$ and passes through the point $(6,-1)$.

$1 \quad -\frac{3}{2}$

$y-(-1)=-\frac{3}{2}(x-6)$

$y+1=-\frac{3}{2}x+9$

$y=-\frac{3}{2}x+8$

4. A line that contains the two points $(1,6)$ *and* $(3,2)$.

$\frac{6-2}{1-3}=\frac{4}{-2}=-2$

$y-6=-2(x-1)$

$y-6=-2x+2$

$y=-2x+8$

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Writing Equations Wkst including task