Unit 2 Linear Functions
Day 3 Notes Slope Intercept Form (PH 6-2)

Review: Write the slope formula

Find the slope of $\overleftrightarrow{A B}$.
Name: $\qquad$
Date: $\qquad$ Hour: $\qquad$
$\mathrm{m}=$ $\qquad$

If you know the slope of a line and its $y$-intercept, you can write the equation of the line. The letter $m$ refers to the slope and $b$ refers to the $y$-intercept.

Slope-Intercept Form of a Linear Equation: $\quad \boldsymbol{y}=\boldsymbol{m} \boldsymbol{x}+\boldsymbol{b}$

| Vertical Lines: | Slope is undefined | Vertical Equation: $\quad \mathbf{x}=\mathbf{a}$ |
| :--- | :--- | :--- |
| Horizontal Lines: | Slope is zero | $\underline{\text { Horizontal Equation: }} \mathbf{y = b}$ |
| $\underline{~ y ~}$ |  |  |

Example 1: What are the slope and $y$-intercept of each equation? Sketch each graph.
a. $y=3 x-5$
b. $y=-\frac{4}{5} x$
c. $x=5$
d. $y=-3$


Example 2: a. Write an equation of the line with a slope of $\frac{3}{8}$ and a $y$-intercept of 6 .
b. Write an equation of the line with undefined slope passing through the point $(3,5)$
c. Write an equation of the line with a slope of zero and a y-intercept of -4 .

Example 3: Write the equation of the line.


You can write an equation from a graph if you know two points on the line.
Step 1: Find the slope.
Step 2: Pick one of the points. Substitute for $x, y$ and the slope into $y=m x+b$.
Step 3: Solve for b.
Step 4: Re-write the equation using the values for $m$ and $b$.
Example 4: Write the equation of the line passing through the points.
a. $A(2,-5)$ and $B(-6,11)$
b. $\mathrm{A}(6,2)$ and $\mathrm{B}(4,0)$

