Unit 4
Day 16

Parallel and Perpendicular Lines

Identify and write equations of parallel and perpendicular lines.

Partner Think Tank!

1) Using the equation $y = -\frac{3}{4}x + 7$...

a) What is the slope of a line that would be parallel to the above equation? $-3/4$

b) What is the slope of a line that would be perpendicular to the above equation? $4/3$

Determine if the lines below are parallel, perpendicular or neither.

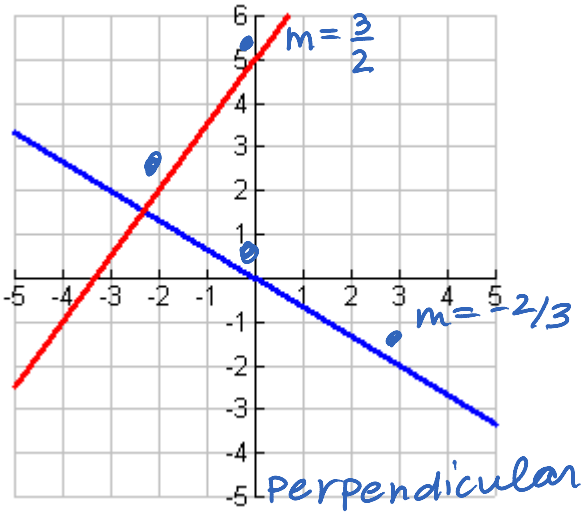
2) $y = -4x + 3$ *and* $4y + x = -1$

$4y = -x - 1$

$y = -\frac{1}{4}x - \frac{1}{4}$

Neither

3)



Example 1:

Write an equation (in Slope-Intercept Form) of the line that passes through (-3, -5) and is parallel to the line $y = 3x - 1$.

$y + 5 = 3(x + 3)$

$y + 5 = 3x + 9$

$y = 3x + 4$

Step 1: Identify the slope of the line.
Step 2: Find the y-int by substituting the slope and a point.
Step 3: Write an equation.

Partner Practice:

Write an equation (in Slope-Intercept Form) of the line that passes through (-2, 11) and is perpendicular to the line $y = -x + 5$.

$m = 1$

$y - 11 = 1(x + 2)$

$y - 11 = x + 2$

$y = x + 13$

Example 2:
Write an equation (in Point-Slope Form) of the line that passes through (4, -5) and is perpendicular to the line $y = 2x + 3$.

$m = -1/2$

$y + 5 = -\frac{1}{2}(x - 4)$

Step 1: Find the slope.

Step 2: Identify a pt.

Step 3: Write an equation.

Partner Practice:
Write an equation (in Point-Slope Form) of the line that passes through (4, 3) and is parallel to $y = 4x - 7$.

$m = 4$

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

Example 3:
Write an equation (in Standard Form) of the line that passes through (5, -4) and is parallel to $y = 2x + 3$.

$m = 2$

$y + 4 = 2(x - 5)$

$y + 4 = 2x - 10$

$y = 2x - 14$

$\boxed{2x + y = -14}$

Step 1: Find the slope.

Step 2: Write the equation in point-slope or slope-intercept form.

Step 3: Write an equation in Standard Form

Partner Practice:
Write an equation (in Standard Form) of the line that passes through (-4, 2) and is perpendicular to $y = \frac{1}{4}x - 7$.

x_1, y_1

$m = -4$

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

$y - 2 = -4x - 16$

$y = -4x - 14$

$\boxed{4x + y = -14}$