$$\boxed{\text{Parallel Lines have the same slope}}$$

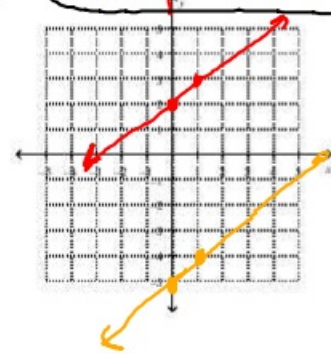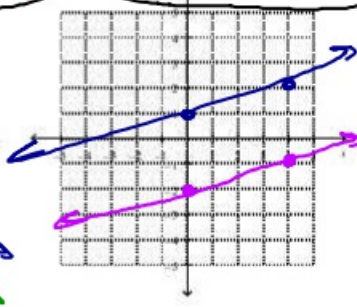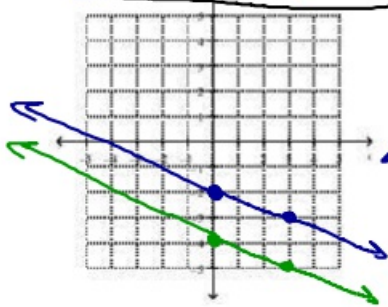Graph each pair of lines on the same coordinate plane. Make sure you list the slope of each line.

1. $y = \dfrac{-1}{3}x - 2$ and $y = \dfrac{-1}{3}x - 4$ 2. $y = \dfrac{1}{4}x - 2$ and $y = \dfrac{1}{4}x + 1$ 3. $y = \dfrac{1}{1}x + 2$ and $y = \dfrac{1}{1}x - 5$

y-int = -2   y-int = -4   y-int = -2   y-int = 1   y-int = 2   y-int = -5

slope $= -\dfrac{1}{3}$ slope $= -\dfrac{1}{3}$ slope $= \dfrac{1}{4}$ slope $\dfrac{1}{4}$ slope $= \dfrac{1}{1}$ slope $= \dfrac{1}{1}$
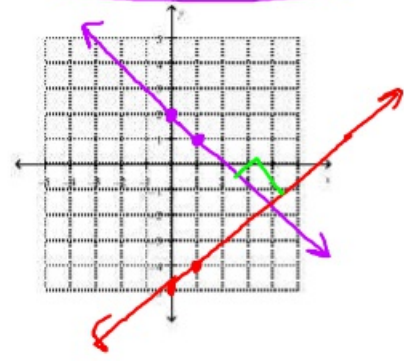
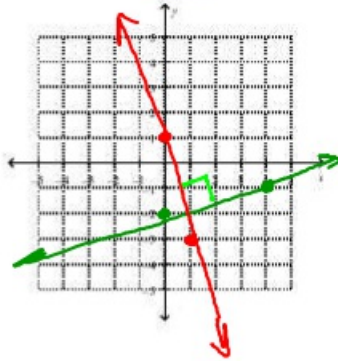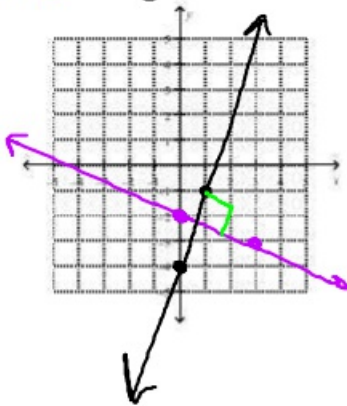1. $y = \dfrac{-1}{3}x - 2$ and $y = 3x - 4$ 2. Graph $y = \dfrac{1}{4}x - 2$ and $y = -4x + 1$ 3. $y = -x + 2$ and $y = x - 5$

slope $= -\dfrac{1}{3}$ slope $= \dfrac{3}{1}$ $m = \dfrac{1}{4}$ $m = -\dfrac{4}{1}$ $m = \dfrac{-1}{1}$ $m = \dfrac{1}{1}$

y-int = -2   y-int = -4

Perpendicular Lines form right angles
  - reciprocals; slope is flipped
  - opposites: one is pos and one is neg

Write in point-slope form the equation of the line that is parallel to the given line and passes through the given point. Your final answer should be in slope-intercept form.

1. $y = x + 5$, (-1, +1)

$y = x + 5$

m = __1__

point __(-1, 1)__

point-slope: $y = y_1 + m(x - x_1)$

$y = 1 + 1(x + 1)$

$y = 1 + x + 1$

$y = x + 2$

2. $y = -3x + 1$ (2, 4)

m = __-3__

point __(2, 4)__

point-slope: $y = 4 - 3(x - 2)$

3. $y = \frac{1}{4}x - 6$, (3, 3)

m = __$\frac{1}{4}$__

point __(3, 3)__

point-slope: $y = 3 + \frac{1}{4}(x - 3)$

Write in point-slope form the equation of the line that is perpendicular to the given line and passes through the given point. Your final answer should be in slope-intercept form.

1. $y = 2x + 5$, (-1, -1)

$y = 2x + 5$

$m = \frac{2}{1}$

m = __$-\frac{1}{2}$__

point __(-1, -1)__

point-slope: _____

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

2. $y = -3x + 1$ (2, 4)

$m = -\frac{3}{1}$

m = __$\frac{1}{3}$__

point __(2, 4)__

point-slope: $y = 4 + \frac{1}{3}(x - 2)$

perpendicular $\perp$

3. $y = \frac{1}{4}x - 6$, (3, 3)

$m = \frac{1}{4}$

m = __$\frac{-4}{1} = -4$__

point __(3, 3)__

point-slope: $y = 3 - 4(x - 3)$

Write in point-slope form the equation of the line that is ⭕parallel to the given line and passes through the given point. Your final answer should be in slope-intercept form.

1. $2x + y = 4$, $(-1, -1)$

$2x + y = 4$
$-2x \qquad -2x$
$\boxed{y = 4 - 2x}$

$m = \underline{\quad -2 \quad}$

point $\underline{(-1,-1)}$

point-slope: $y = -1 - 2(x+1)$
$\qquad \qquad \uparrow$
$\qquad (x-(-1))$

2. $-3x + 2y = 6$, $(2, 4)$

$-3x + 2y = 6$
$+3x \qquad +3x$
$\dfrac{2y}{2} = \dfrac{6}{2} + \dfrac{3x}{2}$
$y = 3 + \dfrac{3}{2}x$

$m = \underline{\quad \dfrac{3}{2} \quad}$

point $\underline{(2,4)}$

point-slope: $\boxed{y = 4 + \dfrac{3}{2}(x-2)}$

3. $5x - 2y = 10$, $(3, 3)$

$5x - 2y = 10$
$-5x \qquad \qquad -5x$
$\dfrac{-2y}{-2} = \dfrac{10}{-2} - \dfrac{5x}{-2}$
$y = -5 + \dfrac{5}{2}x$

$m = \underline{\quad \dfrac{5}{2} \quad}$

point $\underline{(3,3)}$

point-slope: $y = 3 + \dfrac{5}{2}(x-3)$

Write in point-slope form the equation of the line that is perpendicular to the given line and passes through the given point. Your final answer should be in slope-intercept form.

1. $2x + y = 4$, $(-1, -1)$

$m = \underline{\hspace{3cm}}$

point $\underline{\hspace{2.5cm}}$

point-slope: $\underline{\hspace{3cm}}$

2. $-3x + 2y = 6$, $(2, 4)$

$m = \underline{\hspace{3cm}}$

point $\underline{\hspace{2.5cm}}$

point-slope: $\underline{\hspace{3cm}}$

3. $5x - 2y = 10$, $(3, 3)$

$m = \underline{\hspace{3cm}}$

point $\underline{\hspace{2.5cm}}$

point-slope: $\underline{\hspace{3cm}}$