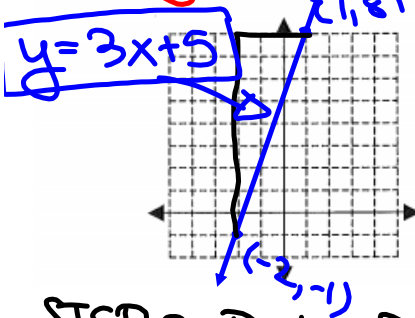


Algebra – Worksheet 3.13 – Writing an equation when given two points

Name: _____ Date: _____ Period: _____

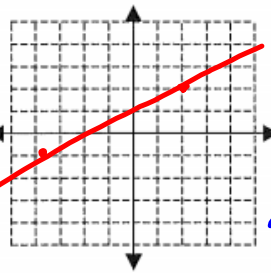
Graph the line that passes through the points. Then write the equation of the line in slope-intercept form.

1. (1, 8) and (-2, -1)



Step 1:
Find slope
 $m = \frac{9}{3} = 3$
 $m = 3$

2. (-4, -1) and (2, 2)



$m = \frac{3}{6} = \frac{1}{2}$
use $(2, 2)$

$y = mx + b$
 $2 = \frac{1}{2} \cdot 2 + b$
 $2 = 1 + b$
 $-1 \quad -1$

 $1 = b$

STEP 2: Pick a Point: $(1, 8)$ STEP 3: Use $y = mx + b$ to find "b"

$8 = 3(1) + b$
 $8 = 3 + b$
 $-3 \quad -3$

 $b = 5$

$y = \frac{1}{2}x + 1$

$$m = \frac{P_2 - r_2}{P_1 - r_1}$$

Use the slope formula to find the slope of the line between the given points.

3. $P(-4, 1)$ and $Q(2, 5)$
 P_1, P_2 r_1, r_2

$$m = \frac{1 - +5}{-4 - 2}$$

$$m = \frac{6}{-6} = -1$$

4. $P(2, -3)$ and $Q(-3, 7)$
 P_1, P_2 r_1, r_2

$$m = \frac{-3 - 7}{2 - -3}$$

$$m = \frac{-10}{5} = -2$$

$$y = mx + b$$

Write the equation in **slope-intercept form** for the line with the given slope that contains the given point.

5. slope = 1; (-2, 3)

$$m = 1 \quad x, y$$

$$y = m \cdot x + b$$

$$3 = 1 \cdot -2 + b$$

$$3 = -2 + b$$

$$+2 \quad +2$$

$$5 = b$$

$$y = 1x + 5$$

6. slope = -3; (-1, 6)

$$y = mx + b$$

$$6 = -3(-1) + b$$

$$6 = 3 + b$$

$$-3 \quad -3$$

$$3 = b$$

$$y = -3x + 3$$

$$m = \frac{P_2 - r_2}{P_1 - r_1}$$

Write the equation of the line in slope-intercept form that passes through the given points.

7. P: (0, -5) and R: (3, 4)

8. (2, 4) and (1, -2)

① Find slope.

$$m = \frac{-5 - 4}{0 - 3} = \frac{-9}{-3} = 3$$

② Pick a point: (3, 4)
x: 3, y: 4

③ Solve for b:

$$y = mx + b$$

$$4 = 3(3) + b$$

$$4 = 9 + b$$

$$\frac{-9 \quad -9}{-9 \quad -9}$$

$$b = -5$$

$$\boxed{y = 3x - 5}$$

9. $(2, -2)$ and $(-4, 1)$

10. $(4, 3)$ and $(-8, 0)$