Secondary Math 1

Unit 4 Notes

Writing Linear Functions

Name _____

Period _____

4.1 Writing Equations in Slope-Intercept Form

In your own words, write the meaning of each vocabulary term.

linear model linear function that models a real life situation. We can use $y = mx + b$

Notes:

m: slope, $\frac{\text{rise}}{\text{run}}$, $\frac{\Delta y}{\Delta x}$, $\frac{y_2 - y_1}{x_2 - x_1}$

b: y-intercept, where graph crosses y-axis that is when $x = 0$:) $(0, b)$

4.1 Practice

$y = mx + b$

slope y-int

In Exercises 1–6, write an equation of the line with the given slope and *y*-intercept.

1. slope: 0
y-intercept: 9

$y = 0x + 9$
$y = 9$

2. slope: −1
y-intercept: 0

$y = -1x + 0$
$y = -x$

3. slope: 2
y-intercept: −3

$y = 2x - 3$

4. slope: −3
y-intercept: 7

$y = -3x + 7$

5. slope: 4
y-intercept: −2

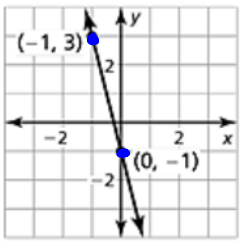
$y = 4x - 2$

6. slope: $\frac{1}{3}$
y-intercept: 2

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

In Exercises 7–12, write an equation of the line in slope-intercept form.

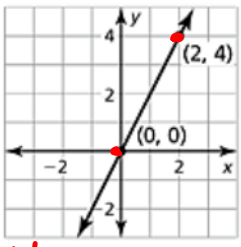
7.



m: $\frac{-4}{1}$
b: −1

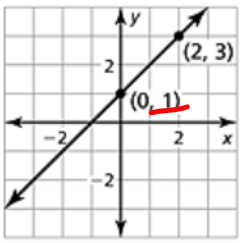
$y = -4x - 1$

8.



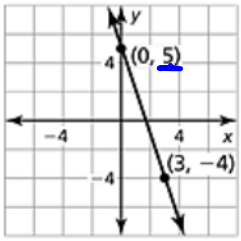
$\frac{4}{2} = m$
b = 0
$y = 2x$

9.



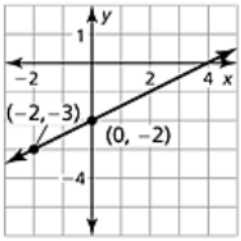
$m = \frac{2}{2}$
b = 1
$y = x + 1$

10.



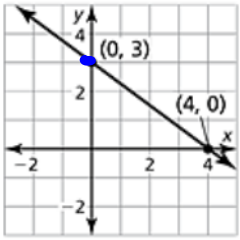
$-\frac{9}{3}$
b = 5
$y = -3x + 5$

11.



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

12.



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

4.1 Practice

In Exercises 13–15, write an equation of the line that passes through the given points.

13. $(3, -1), (0, 4)$ $(0,4)$

$m: \frac{4+1}{0-3} = \frac{5}{3}$

$b: 4$

$y = -\frac{5}{3}x + 4$

14. $(2, 1), (0, 5)$ $(0,5)$

$m: \frac{4}{2}$

$b: 5$

$y = \frac{4}{2}x + 5$

15. $(0, 2), (4, 3)$

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

$b: 2$

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

In Exercises 19–24, write a linear function *f* with the given values.

16. $f(6) = -2, f(4) = -3$

$(6,-2)$ $(4,-3)$

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

$f(0) = -5$

$f(x) = \frac{1}{2}x - 5$

17. $f(0) = 5, f(5) = 15$

$(0,5)$ $(5,15)$

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

$b = 5$

$f(x) = 2x + 5$

18. $f(0) = -3, f(9) = -4$

$\frac{-4+3}{9-0} = -\frac{1}{9}$

$f(x) = -\frac{1}{9}x - 3$

19. An electrician charges \$120 after 2 hours of work and \$190 after 4 hours of work.

a. Write a linear model that represents the total cost as a function of the number of hours worked.

b. What is the electrician's initial fee?

c. How much does the electrician charge per hour?