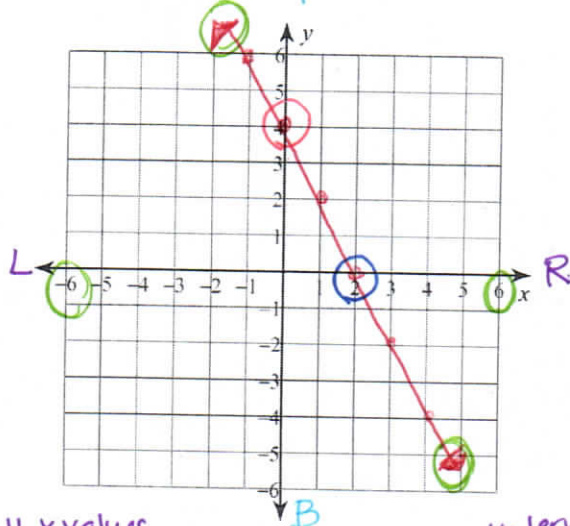


Graphing Linear Equations and Characteristics

Directions: Graph each linear equation and identify the key characteristics.

1) $y = -2x + 4$



All x values
 Domain: $(-\infty, \infty)$ ← Interval NOT (x,y)!!!
 L → R

All y values
 Range: $(-\infty, \infty)$
 B → T

x intercept: $(2, 0)$

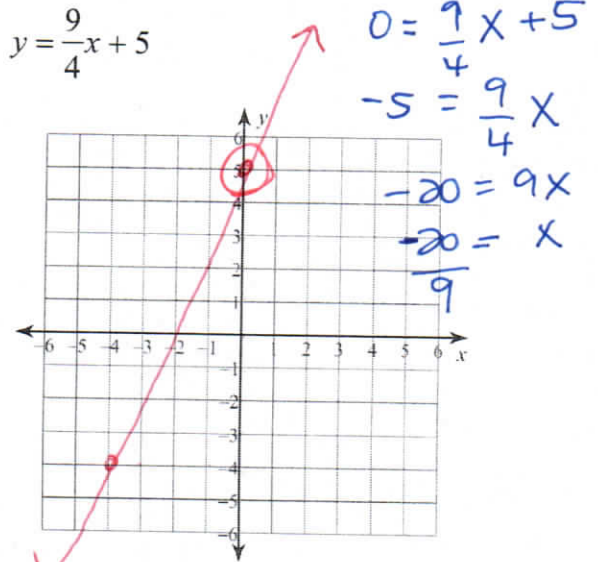
y intercept: $(0, 4)$

End Behavior: $x \rightarrow -\infty y \rightarrow \infty$

$x \rightarrow \infty y \rightarrow -\infty$

2)

$y = \frac{9}{4}x + 5$



$0 = \frac{9}{4}x + 5$
 $-5 = \frac{9}{4}x$
 $-20 = 9x$
 $-\frac{20}{9} = x$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

(x,0) x intercept: $(-\frac{20}{9}, 0)$

y intercept: $(0, 5)$

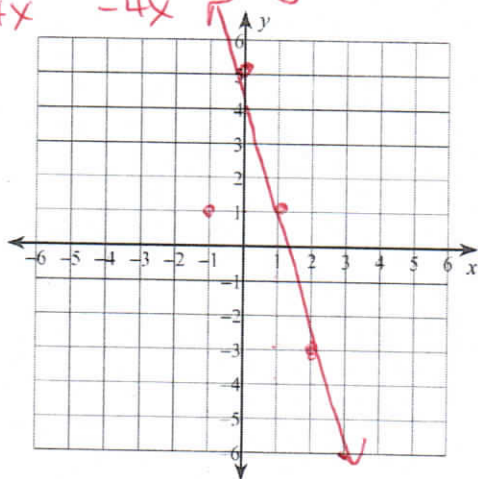
End Behavior: $x \rightarrow -\infty y \rightarrow -\infty$

$x \rightarrow \infty y \rightarrow \infty$

Directions: Solve for y and graph.

3) $4x + y = 5$

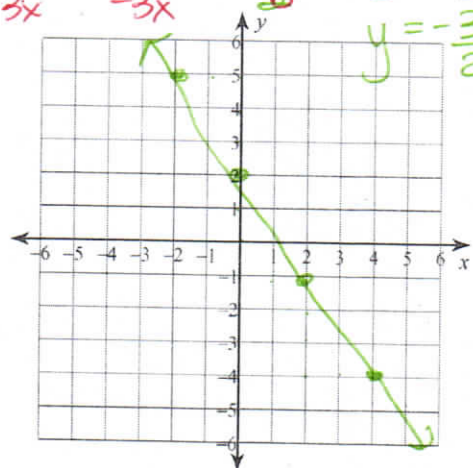
$-4x -4x$ $y = -4x + 5$



4)

$3x + 2y = 4$

$-3x -3x$ $\frac{2y}{2} = \frac{-3x+4}{2}$
 $y = -\frac{3}{2}x + 2$

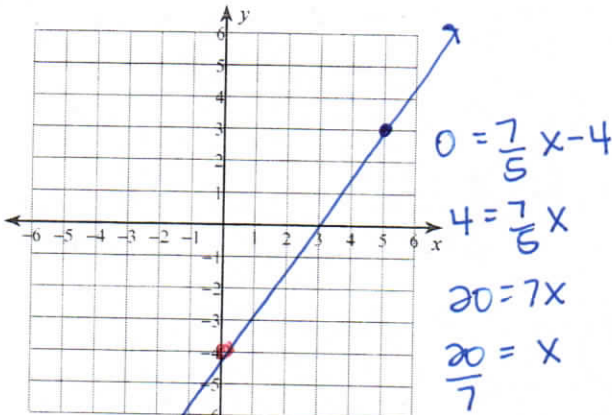


Graphing Practice

Date _____ Period _____

Sketch the graph of each line. Then identify the listed characteristics.

1) $y = \frac{7}{5}x - 4$



domain: $(-\infty, \infty)$

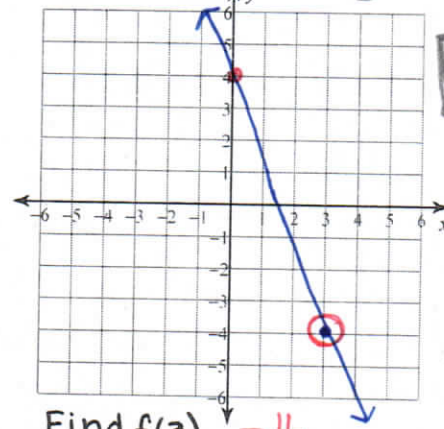
range: $(-\infty, \infty)$

x-int: $(2.9, 0)$

y-int: $(0, -4)$

increasing or decreasing?
(circle one)
positive slope

2) $8x + 3y = 12$



$y = -\frac{8}{3}x + 4$

$0 = -\frac{8}{3}x + 4$
 $-4 = -\frac{8}{3}x$
 $-12 = -8x$
 $\frac{12}{8} = x$
 $\frac{3}{2} = x$

Find $f(3)$. -4

x-int: $(1.5, 0)$

y-int: $(0, 4)$

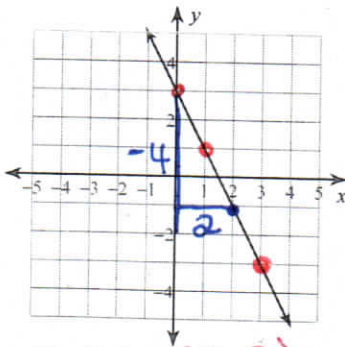
slope: $-\frac{8}{3}$

As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$

As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$

Write the slope-intercept form of the equation of each line. Then identify the listed characteristics.

3)



y-int: $(0, 3)$

slope: -2

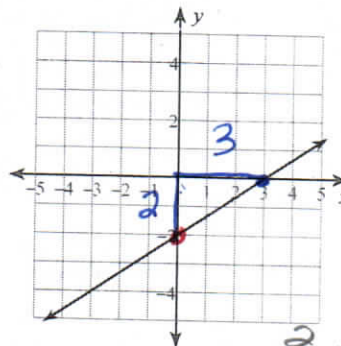
x-int: $(1.5, 0)$

Find x where $f(x) = -3$. 3

$f(1) = 1$

equation: $y = -2x + 3$

4)



equation: $y = \frac{2}{3}x - 2$

As $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$

As $x \rightarrow \infty$, $f(x) \rightarrow \infty$

domain: $(-\infty, \infty)$

range: $(-\infty, \infty)$

x-int: $(3, 0)$

1. Evaluate the following expressions given the functions below:

$$g(x) = -3x + 1$$

$$f(x) = x^2 + 7$$

$$h(x) = \frac{12}{x}$$

$$j(x) = 2x + 9$$

a. $g(10) = -29$
 $-3(10) + 1$
 $-30 + 1$

b. $f(-3) = 16$
 $(-3)^2 + 7$
 $9 + 7$

c. $h(-2) = -6$
 $\frac{12}{-2}$

d. $h(a)$

e. $g(b+c)$

f. Find x if $g(x) = 16$

$$16 = -3x + 1$$

$$15 = -3x$$

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

g. Find x if $h(x) = -2$

$$-2 = \frac{12}{x}$$

$$-2x = 12$$

$$\boxed{x = -6}$$

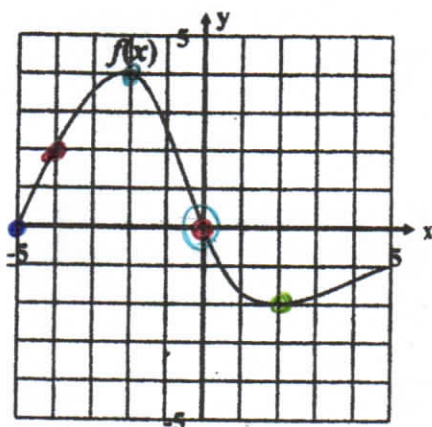
h. Find x if $f(x) = 23$

$$23 = x^2 + 7$$

$$\sqrt{16} = \sqrt{x^2}$$

$$\boxed{4 = x}$$

5. Given this graph of the function $f(x)$:



Find:

a. $f(-4) = 2$

b. $f(0) = 0$

c. $f(2) = -2$

d. $f(-5) = 0$

e. x when $f(x) = 4$
 -2

f. x when $f(x) = 0$
 0

6. Find an equation of a linear function given $h(1) = 6$ and $h(4) = -3$.
 (NOTE: Same as write the equation of the line given two points!)

APPLICATION

Swine flu is attacking Porkopolis. The function below determines how many people have swine where t = time in days and S = the number of people in thousands.