Name _____ Date _____

CHAPTER 3 Intercepts of Horizontal and Vertical Lines

A slanting line in a graph will have both a y- and an x-intercept. What about vertical and horizontal lines?

A horizontal line has a y-intercept but no x-intercept–unless, that is, the line lies on top of the x-axis, in which case it has infinitely many x-intercepts! By the same token, a vertical line has exactly one x-intercept, and has no y-intercept unless it lies on the y-axis.

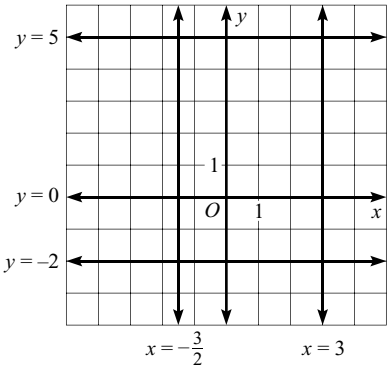
EXAMPLE 1 Find the intercepts of the graph of an equation

a. $y = 5$ **b.** $x = 3$ **c.** $y = -2$

d. $x = -\frac{3}{2}$ **e.** $y = 0$

Solution:

The graphs of the five lines are as shown.



a. $y = 5$ has a y-intercept of 5 and no x-intercept.

b. $x = 3$ has an x-intercept of 3 and no y-intercept.

c. $y = -2$ has a y-intercept of -2 and no x-intercept.

d. $x = -\frac{3}{2}$ has an x-intercept of $-\frac{3}{2}$ and no y-intercept.

e. $y = 0$ has a y-intercept of 0 and infinitely many x-intercepts. ■

Practice

Find the *x*-intercept(s) and the *y*-intercept(s) of the graph of the equation.

1. $y = 5$ **2.** $x = -4$ **3.** $y = -\frac{3}{4}$

4. $x = 0$ **5.** $y = 9$ **6.** $y = 0$

Write the equation of the line that has the given intercepts.

7. x-intercept: -2
y-intercept: none

8. x-intercept: none
y-intercept: 7

9. x-intercept: 0
y-intercepts: all real numbers