

The Slope-Intercept Form of an Equation

Objectives: For an equation in the form $y = mx + b$:
 identify the y-intercept as $(0, b)$;
 graph the equation using the slope and y-intercept; and
 write an equation given the slope and y-intercept or from a graph.

Using the linear form $y = mx + b$ (called slope-intercept form),

m (the coefficient of x) represents the slope of the line; and

b (the constant) represents the y-intercept of the line.

The point where the line crosses the y-axis is called the y-intercept and that point is identified by the ordered pair $(0, \#)$.
 $(0, b)$

Give the coordinates where the line for each equation crosses the y-axis.

1. $y = 3x + 4$

$(0, 4)$

2. $y = -\frac{1}{2}x - 9$

$(0, -9)$

3. $y = 5x + 0$

$(0, 0)$

4. $y = 8x + 7$
 $y = 7 + 8x$

$(0, 7)$

Write the equation of a line given the slope and y-intercept.

5. slope = 2
y-intercept = 9

$y = 2x + 9$

6. slope = -6
y-intercept = -1

$y = -6x - 1$

7. slope = -1
y-intercept = -8

$y = -1x - 8$

8. slope = $\frac{1}{4}$
y-intercept = 0

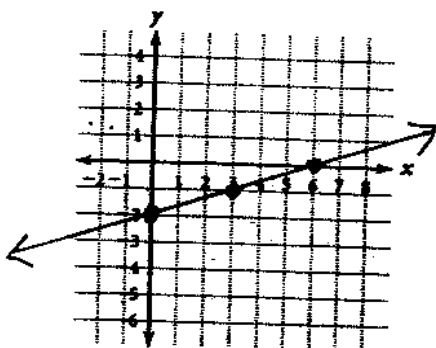
$y = \frac{1}{4}x + 0$

1. graph the y-intercept $(0, b)$

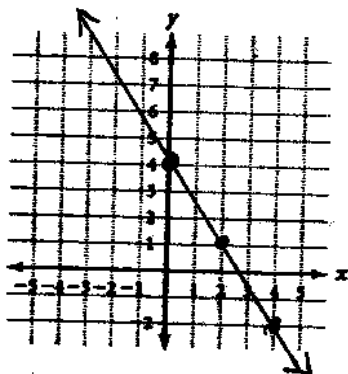
Graph each line from its equation.

2. $\frac{\text{rise}}{\text{run}}$ from the y-int.

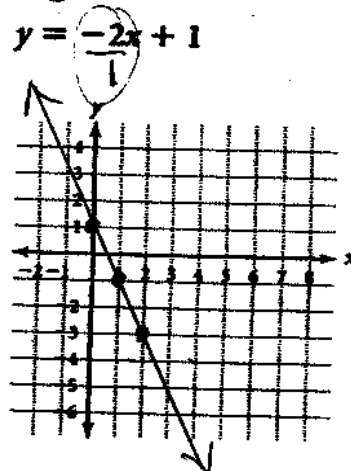
9. $y = \frac{1}{3}x - 2$



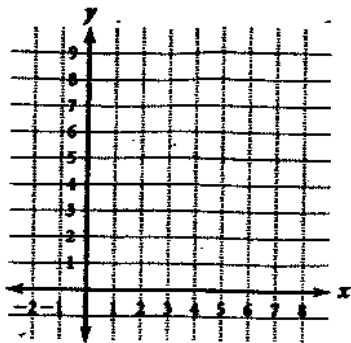
10. $y = -\frac{3}{2}x + 4$



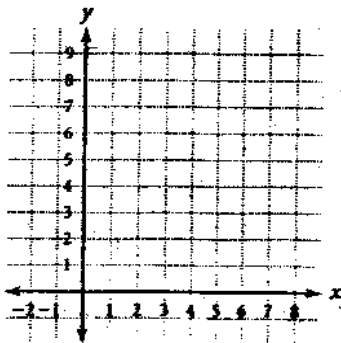
11. $y = -\frac{2}{1}x + 1$



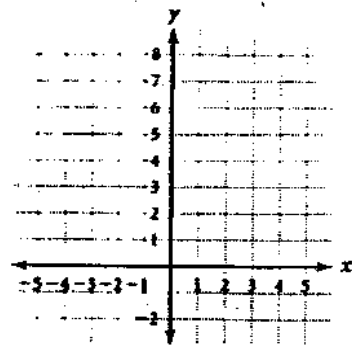
12. $y = \frac{2}{3}x + 4$



13. $y = -4x + 8$

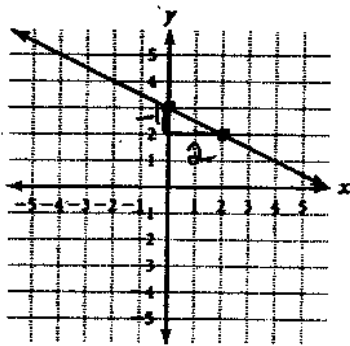


14. $y = 3x + 1$



Write an equation in slope-intercept form from each graph.

15.

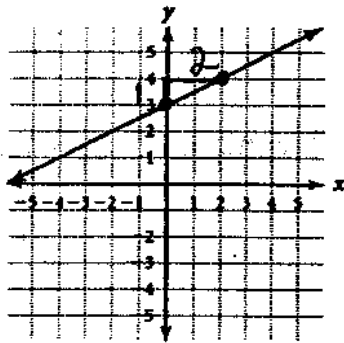


slope = $-\frac{1}{2}$

y-intercept = 3

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

16.

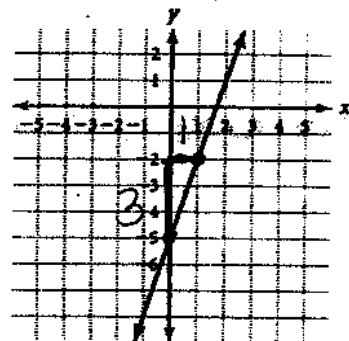


slope = $\frac{1}{2}$

y-intercept = 3

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

17.

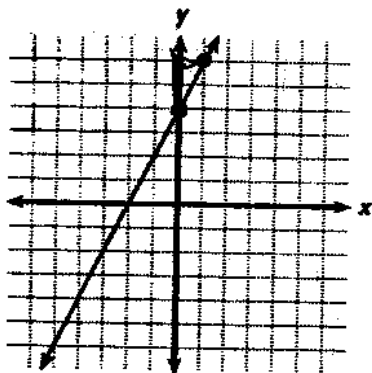


slope = $\frac{3}{1} = 3$

y-intercept = -5

$y = 3x - 5$

18.

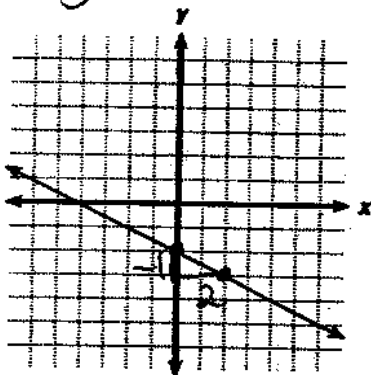


slope = $\frac{2}{1} = 2$

y-intercept = 4

$y = 2x + 4$

19.

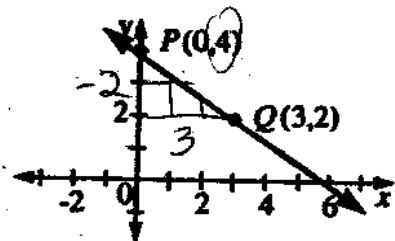


slope = $-\frac{1}{2}$

y-intercept = -2

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

20.



slope = $-\frac{2}{3}$

y-intercept = 4

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