

## Section 3: Slope of a Line

11. Find the slope of the line passing through the points  $(-1, 3)$  and  $(-4, 6)$ .

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{6 - 3}{-4 - (-1)} = \frac{3}{-4 + 1} = \frac{3}{-3} = -1$$

+ you may also use  $m = \frac{y_1 - y_2}{x_1 - x_2}$

12. Find the slope of the line passing through the points  $(2, -5)$  and  $(8, 1)$ .

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - (-5)}{8 - 2} = \frac{1 + 5}{6} = \frac{6}{6} = 1$$

- (A) 1  
B. -1  
C. -2  
D. 2

$$\frac{y}{x} = \boxed{1}$$

## Section 4: Writing Linear Equations

13. Write the equation for the line that goes through the point  $(5, 2)$  and has a slope of  $-\frac{2}{5}$ .

METHOD #1

$$y - y_1 = m(x - x_1)$$

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

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

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

A.  $y = -\frac{2}{5}x$

(B)  $y = -\frac{2}{5}x + 4$

C.  $y = -\frac{2}{5}x + \frac{29}{5}$

D.  $y = -\frac{2}{5}x + 2$

METHOD #2

$$y = mx + b$$

$$y = -\frac{2}{5}x + b$$

$$2 = -\frac{2}{5}(5) + b$$

$$2 = -2 + b$$

$$4 = b$$

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

SLOPE-INTERCEPT FORM

14. Write the equation for the line that goes through the point  $(5, 2)$  and has a slope of  $\frac{2}{5}$ .

POINT-SLOPE FORM  
METHOD #1

$$y - y_1 = m(x - x_1)$$

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

$$y - 2 = \frac{2}{5}x - 2$$

$$\boxed{y = \frac{2}{5}x}$$

METHOD #2

$$y = mx + b$$

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

$$2 = \frac{2}{5}(5) + b$$

$$2 = 2 + b$$

$$0 = b$$

$$\boxed{y = \frac{2}{5}x}$$

SLOPE-INTERCEPT FORM

15. Write the equation for the line that goes through the point  $(-1, 2)$  and  $(3, -2)$ .

or find slope  $x_1, y_1, x_2, y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 2}{3 - (-1)} = \frac{-4}{4} = -1$$

method #1

$$y - y_1 = m(x - x_1)$$

$$y - 2 = -1(x - (-1))$$

$$y - 2 = -1(x + 1)$$

$$y - 2 = -1x - 1$$

$$\boxed{y = -1x + 1}$$

method #2

$$y = mx + b$$

$$y = -1x + b$$

$$2 = -1(-1) + b$$

$$2 = 1 + b$$

$$1 = b$$

$$\boxed{y = -1x + 1}$$

SLOPE-INTERCEPT FORM

16. Write the equation for the line that goes through the point  $(1, 4)$  and  $(-1, 2)$ .

find slope  $x_1, y_1, x_2, y_2$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 4}{-1 - 1} = \frac{-2}{-2} = 1$$

A.  $y = x + 5$

B.  $y = x + 4$

(C)  $y = x + 3$

D.  $y = x + 2$

method #1

$$y - y_1 = m(x - x_1)$$

$$y - 4 = 1(x - 1)$$

$$y - 4 = x - 1$$

$$\boxed{y = x + 3}$$

method #2

$$y = mx + b$$

$$y = 1x + b$$

$$4 = 1(1) + b$$

$$4 = 1 + b$$

$$3 = b$$

$$\boxed{y = x + 3}$$

+ you may use the point  $(-1, 2)$

POINT-SLOPE FORM

POINT-SLOPE FORM

+ you may use the point  $(3, -2)$