

# Slope and Y-intercept

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Slope Intercept form =  $y = mx + b$   
slope ↑  $m$   $x$   $+$   $b$  y-intercept ↓

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

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

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

④  $y = \frac{2}{5}x - 2$  slope =  $\frac{2}{5}$   
 y-intercept =  $-2$

Next page - solve for y

step 1 - move x

2 - divide by # in front of y

①  $\frac{-3x}{+3x} + 2y = \frac{6}{+3x}$  slope =  $\frac{3}{2}$   
 $\frac{2y}{2} = \frac{3x+6}{2}$  y-intercept =  $3$   
 $y = \frac{3}{2}x + 3$

②  $\frac{-5x}{+5x} + 3y = \frac{-9}{+5x}$  slope =  $\frac{5}{3}$   
 $\frac{3y}{3} = \frac{5x-9}{3}$  y-inter =  $-3$   
 $y = \frac{5}{3}x - 3$

③  $\frac{4x}{-4x} + 9y = \frac{-9}{-4x}$  slope =  $-\frac{4}{9}$   
 $\frac{9y}{9} = \frac{-4x-9}{9}$  y-int. =  $-1$   
 $y = -\frac{4}{9}x - 1$

④  $\frac{x}{-x} + 4y = \frac{32}{-x}$  slope =  $-\frac{1}{4}$   
 $\frac{4y}{4} = \frac{-1x+32}{4}$  y-int. =  $8$   
 $y = -\frac{1}{4}x + 8$

⑤  $\frac{-x}{+x} + 3y = \frac{6}{+x}$  slope =  $\frac{1}{3}$   
 $\frac{3y}{3} = \frac{1x+6}{3}$  y-int. =  $2$   
 $y = \frac{1}{3}x + 2$

⑥  $\frac{-6x}{+6x} + 4y = \frac{-12}{+6x}$  slope =  $\frac{6}{4}$  or  $\frac{3}{2}$   
 $\frac{4y}{4} = \frac{6x-12}{4}$  y-int. =  $-3$   
 $y = \frac{6}{4}x - 3$

# Slope Intercept Form

$$y = mx + b$$

# Problems 1-4 Special cases

Horizontal 0 slope Y = equation	Vertical Undefined X = problem
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Name: key  
Date: \_\_\_\_\_ Block: \_\_\_\_\_

## Algebra 1

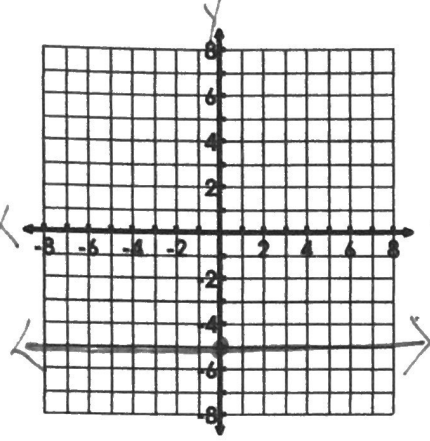
## Day 2-Graphing Lines

Directions: Solve for y (if necessary). Name the slope and y-intercept. Graph the following lines.

SPECIAL CASES 1-4

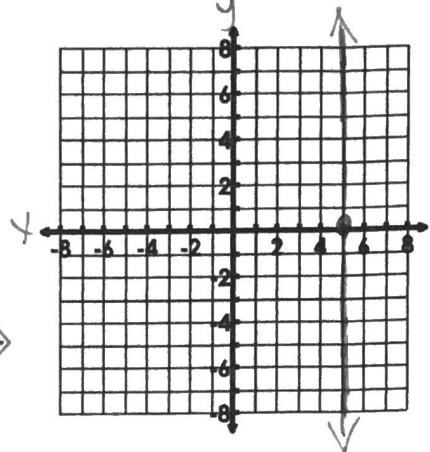
1.  $y = -5$

Slope: 0 Y-int: -5



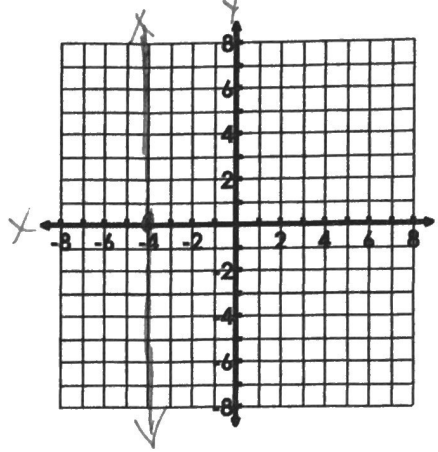
2.  $x = 5$

Slope: undefined Y-int: none



3.  $x = -4$

Slope: undefined Y-int: none



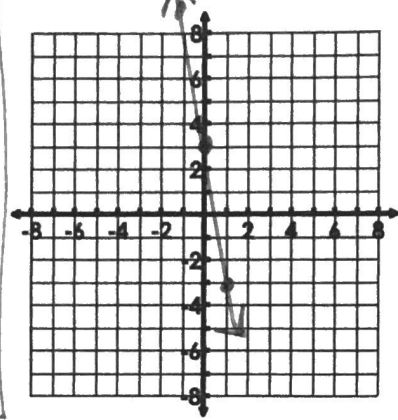
4.  $y = 2$

Slope: \_\_\_\_\_ Y-int: \_\_\_\_\_



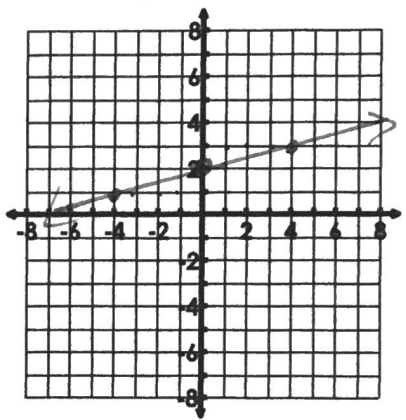
5.  $y = -6x + 3$

Slope: -6 Y-int: 3



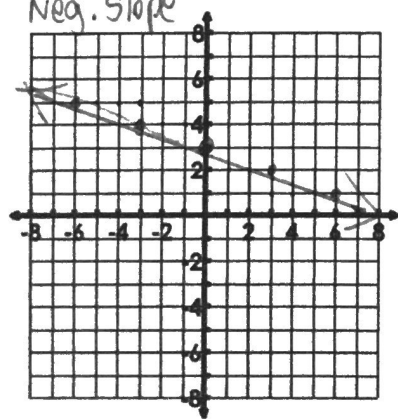
6.  $y = \frac{1}{4}x + 2$

Slope: 1/4 Y-int: 2



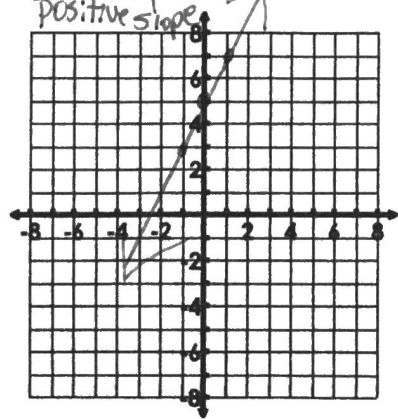
7.  $y = -\frac{1}{3}x + 3$

Slope: -1/3 Y-int: 3  
Neg. slope



8.  $y = 2x + 5$

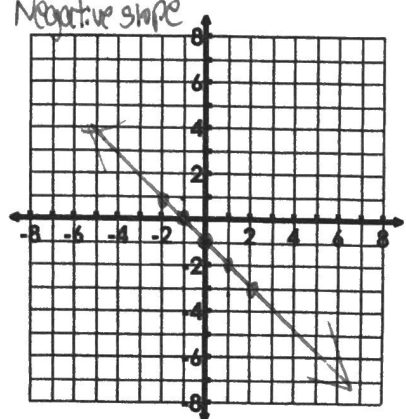
Slope: 2 Y-int: 5  
Positive slope



9.  $x + y = -1$

$y = -x - 1$

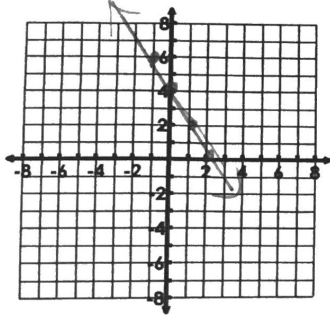
Slope: -1 Y-int: -1  
Negative slope



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

$$y = -2x + 4$$

Slope:  $-\frac{2}{1}$  Y-int:  $4$

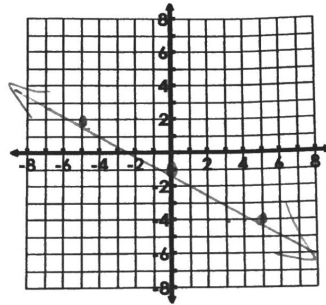


$$11. \frac{3x + 5y = -5}{-3x \quad -3x}$$

$$\frac{5y = -3x - 5}{5} \quad \frac{-3x - 5}{5}$$

$$y = -\frac{3}{5}x - 1$$

Slope:  $-\frac{3}{5}$  Y-int:  $-1$

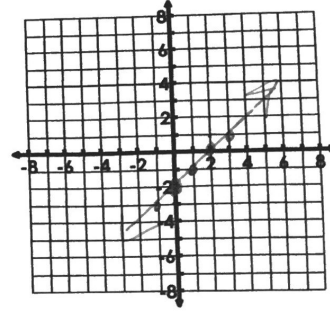


$$12. \frac{2x - 2y = 4}{-2x \quad -2x}$$

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

$$y = x - 2$$

Slope:  $\frac{1}{1}$  or  $1$  Y-int:  $-2$



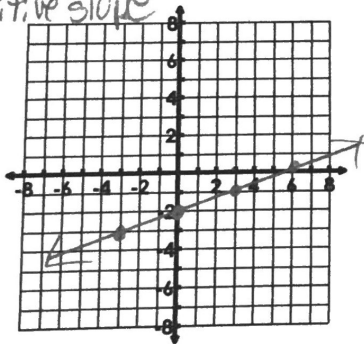
$$13. \frac{x - 3y = 6}{-3y \quad -3y}$$

$$\frac{-x + 6}{-3} \quad \frac{-x + 6}{-3}$$

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

Slope:  $\frac{1}{3}$  Y-int:  $-2$

positive slope



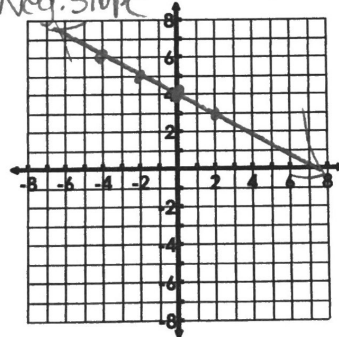
$$14. \frac{x + 2y = 8}{-x \quad -x}$$

$$\frac{2y = -x + 8}{2} \quad \frac{-x + 8}{2}$$

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

Slope:  $-\frac{1}{2}$  Y-int:  $4$

neg. slope

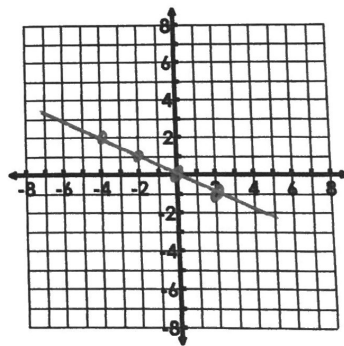


$$15. \frac{x + 2y = 0}{-x \quad -x}$$

$$\frac{2y = -x + 0}{2} \quad \frac{-x + 0}{2}$$

$$y = -\frac{1}{2}x + 0$$

Slope:  $-\frac{1}{2}$  Y-int:  $0$



# Equations

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Notes

- ① Slope-Intercept Form:  $y = mx + b$
- ② Point-Slope Form:  $y - y_1 = m(x - x_1)$
- ③ Slope Formula:  $\frac{y_2 - y_1}{x_2 - x_1}$

①  $y = mx + b$   
 slope:  $-\frac{3}{4}$  y-int: 1      ② slope:  $\frac{1}{5}$  y-int: -4  
 $y = -\frac{3}{4}x + 1$        $y = \frac{1}{5}x - 4$

③ slope:      ④  
 $y = -\frac{1}{3}x - 1$        $y = 1x + 3$  or  $y = x + 3$  or  $y = 1x + 3$

$y = mx + b$  (Look at info. given)

① Slope:  $-\frac{1}{2}$  Point  $(-2, 2)$       ② Slope: 0 Point  $(3, -5)$

$y - y_1 = m(x - x_1)$   
 $y - 2 = -\frac{1}{2}(x + 2)$   
 $y - 2 = -\frac{1}{2}x - 1$   
 $y = -\frac{1}{2}x + 1$

$y - y_1 = m(x - x_1)$   
 $y + 5 = 0(x - 3)$   
 $y + 5 = 0x - 0$   
 $y = -5$  or  $y = -5$

③ Slope: 2 Point:  $(2, 0)$   
 $y - y_1 = m(x - x_1)$   
 $y - 0 = 2(x - 2)$   
 $y - 0 = 2x - 4$   
 $y = 2x - 4$

④ Slope: -1 Point:  $(1, 3)$   
 $y - y_1 = m(x - x_1)$   
 $y - 3 = -1(x - 1)$   
 $y - 3 = -x + 1$   
 $y + 3 = -x + 1$   
 $y = -x + 4$

⑤ Slope:  $-\frac{1}{5}$  Point:  $(-5, -3)$   
 $y - y_1 = m(x - x_1)$   
 $y + 3 = -\frac{1}{5}(x + 5)$   
 $y + 3 = -\frac{1}{5}x - 1$   
 $y = -\frac{1}{5}x - 4$

$-\frac{1}{5} \cdot 5 = -5$  or  $1$

⑥ Slope:  $-\frac{1}{4}$  Point:  $(4, 0)$   
 $y - y_1 = m(x - x_1)$   
 $y - 0 = -\frac{1}{4}(x - 4)$   
 $y - 0 = -\frac{1}{4}x + 1$   
 $y = -\frac{1}{4}x + 1$

$-\frac{1}{4} \cdot -4 = 1$

⑦ Point:  $(0, 5)$  Point:  $(5, -3)$   
 $\frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 5}{5 - 0} = -\frac{8}{5}$

$y - y_1 = m(x - x_1)$   
 $y - 5 = -\frac{8}{5}(x - 0)$   
 $y - 5 = -\frac{8}{5}x - 0$   
 $y + 5 = -\frac{8}{5}x + 5$   
 $y = -\frac{8}{5}x + 5$

⑧ Point:  $(2, -4)$  Point:  $(0, 4)$   
 $\frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-4)}{0 - 2} = \frac{8}{-2} = -4$

$y - y_1 = m(x - x_1)$   
 $y + 4 = -4(x - 2)$   
 $y + 4 = -4x + 8$   
 $y - 4 = -4x + 8 - 4$   
 $y = -4x + 4$