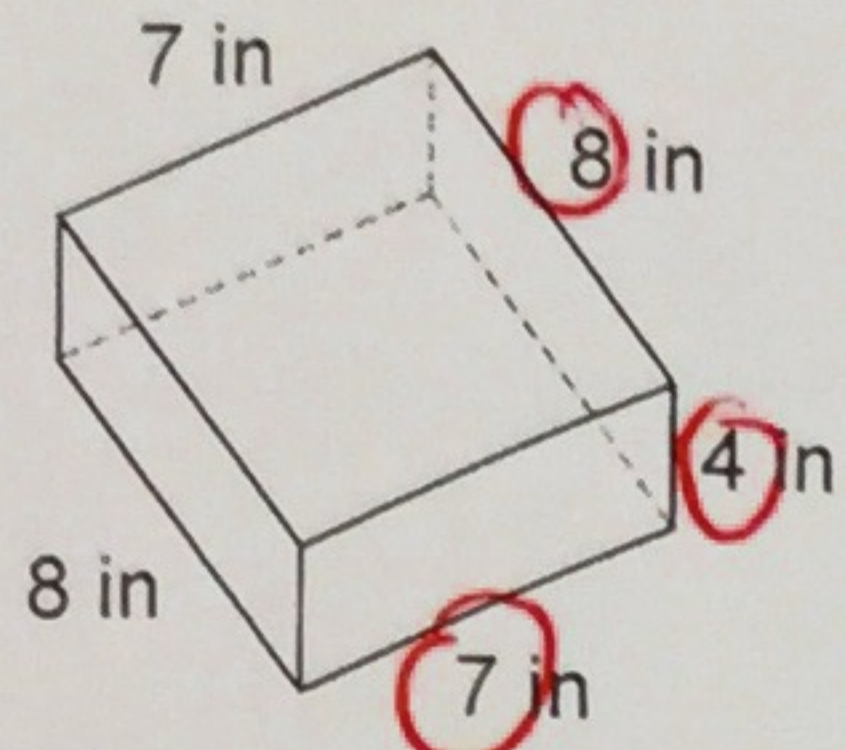


Find the volume of each figure. Round to the nearest tenth. (MCC8.G.9)

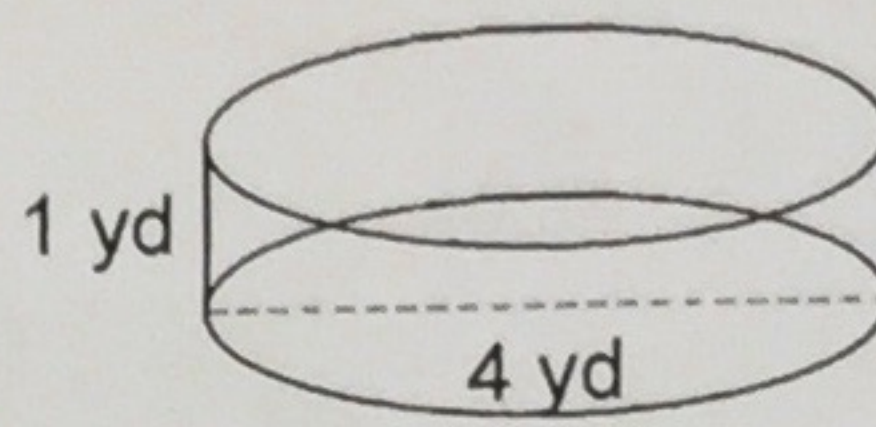
20)



$L \times w \times h$

- A) 268.8 in<sup>3</sup>      B) 191.9 in<sup>3</sup>  
 C) 231.2 in<sup>3</sup>      **D) 224 in<sup>3</sup>**

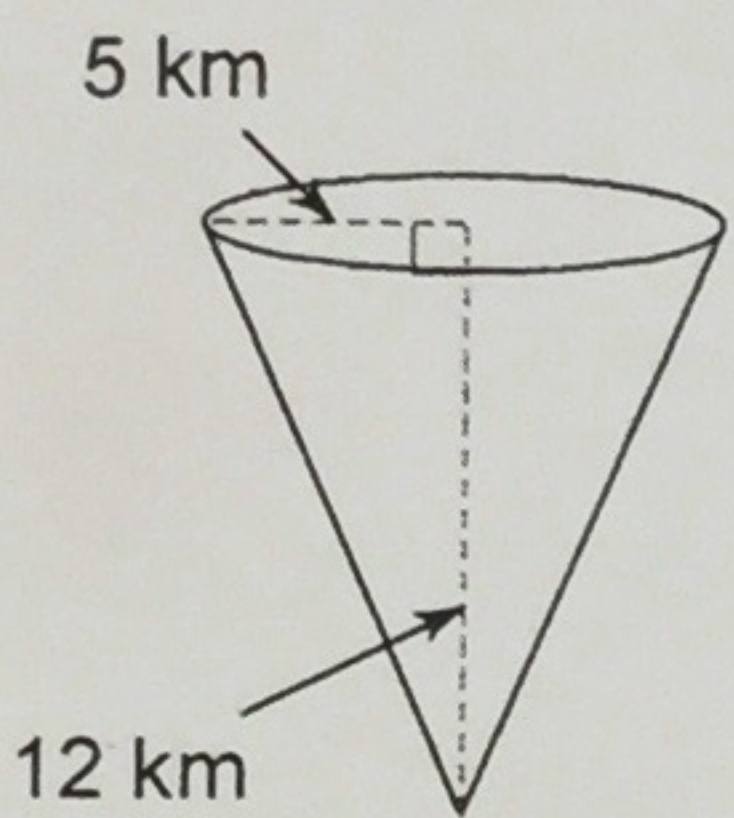
21)



$\pi \cdot r^2 \cdot h$   
 $\pi \cdot 2^2 \cdot 1$

- A) 12.6 yd<sup>3</sup>**      B) 6.3 yd<sup>3</sup>  
 C) 6.9 yd<sup>3</sup>      D) 5.6 yd<sup>3</sup>

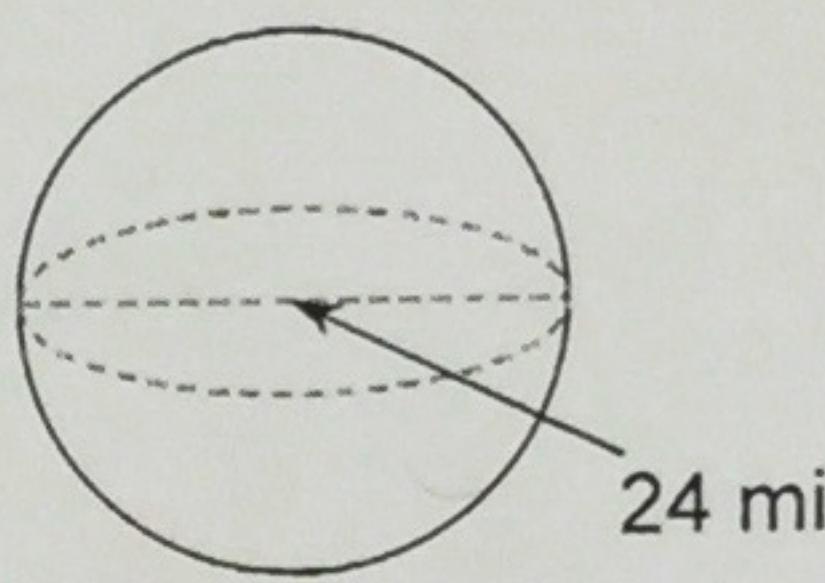
22)



$\frac{\pi \cdot r^2 \cdot h}{3}$

- A) 267 km<sup>3</sup>      **B) 314.2 km<sup>3</sup>**  
 C) 299 km<sup>3</sup>      D) 133.5 km<sup>3</sup>

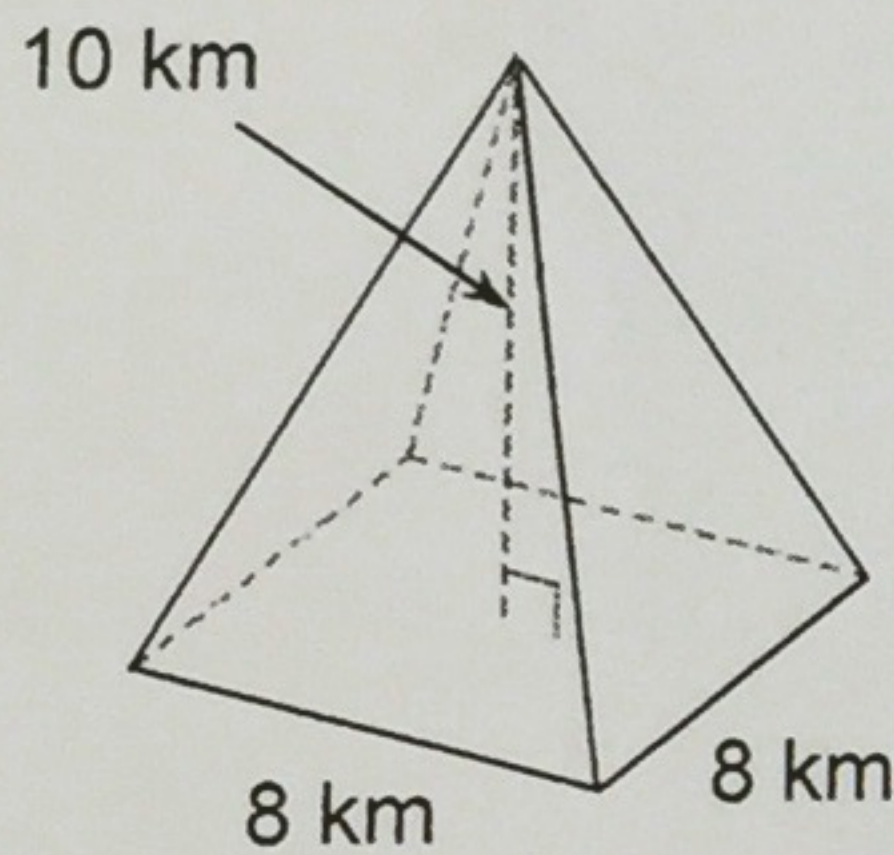
23)



$\frac{4 \cdot \pi \cdot r^3}{3}$

- A) 1809.6 mi<sup>3</sup>      B) 1628.6 mi<sup>3</sup>  
 C) 3619.1 mi<sup>3</sup>      **D) 7238.2 mi<sup>3</sup>**

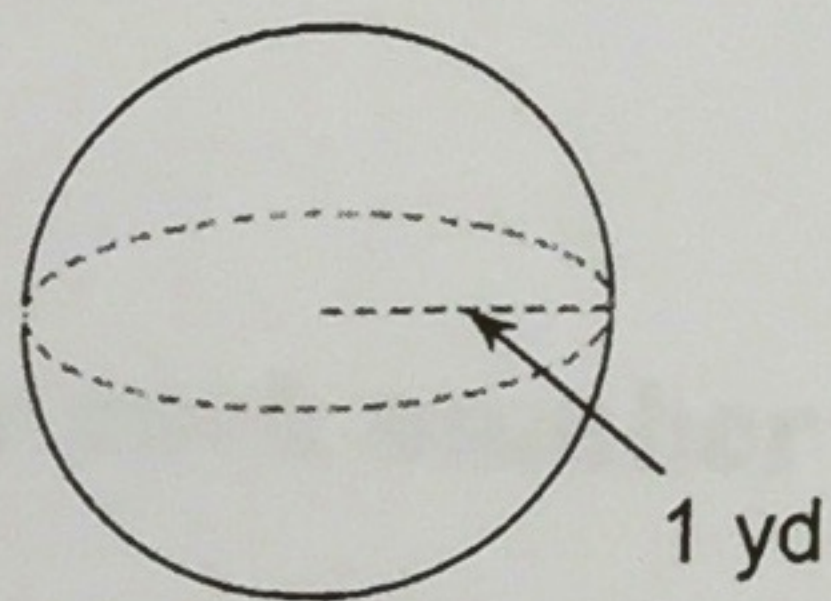
24)



- A) 213.3 km<sup>3</sup>**      B) 251.7 km<sup>3</sup>  
 C) 318.5 km<sup>3</sup>      D) 281.9 km<sup>3</sup>

Find the surface area of each figure. Round to the nearest tenth. (MMC8.G.9)

25)



$4 \cdot \pi \cdot r^2$

- A) 10.7 yd<sup>2</sup>      **B) 12.6 yd<sup>2</sup>**  
 C) 14 yd<sup>2</sup>      D) 12.5 yd<sup>2</sup>

26) What two consecutive whole numbers does the  $\sqrt{53}$  fall between? EXPLAIN how you know this. (MCC8.NS.2)

7 & 8 b/c  $7^2 = 49 > 53$  is between them  
 $8^2 = 64$

27) When solving an equation, explain how you know if a problem will have one solution, no solution, or infinite solutions. (MCC8.EE.7a)

1 solution - you get an answer  
 no solution - all variables cancel, different #'s left  
 inf. solutions - everything cancels out

28) Millard signed a contract stating that he will make \$85,000 a year for the rest of his life working at the shoe factory. How much money will Millard have earned after working for 15 years? Write your answer in BOTH standard and scientific notation form. (MCC8.EE.4)

$85,000 \times 15 = \$1,275,000$   
**SCI**  $1.275 \times 10^6$       standard



## Summer School Final Study Guide

Simplify. Your answer should contain only positive exponents.

1)  $9 \cdot 3^4$

$$\begin{array}{c} \uparrow \\ 3^2 \cdot 3^4 = 3^6 \end{array}$$

2)  $4^3 \cdot 4^{-2} \cdot 4^{-1}$

$$4^{3+(-2)+(-1)} = 4^0 = 1$$

3)  $(4^4)^3$

$$4^{12}$$

4)  $(2^{-4})^0$

$$2^0 = 1$$

5)  $\frac{3^{-2}}{3^4} = 3^{-2-4} = 3^{-6} = \frac{1}{3^6}$

6)  $\frac{3^{-2}}{3^3} = 3^{-2-3} = 3^{-5} = \frac{1}{3^5}$

Write each number in scientific notation.

7) 0.00076

$$\begin{array}{c} \sim \\ -4 \\ 7.6 \times 10^{-4} \end{array}$$

8) 0.35

$$\begin{array}{c} \sim \\ -1 \\ 3.5 \times 10^{-1} \end{array}$$

Write each number in standard notation.

9)  $1.4 \times 10^3 \rightarrow$

$$\begin{array}{c} \sim \\ 3 \\ 1,400 \end{array}$$

pos  $\rightarrow$   
neg  $\leftarrow$ 

10)  $5.9 \times 10^4 \rightarrow$

$$\begin{array}{c} \sim \\ 4 \\ 59,000 \end{array}$$

Simplify. Write each answer in scientific notation.

11)  $(9.08 \times 10^5)(8.2 \times 10^{-1})$

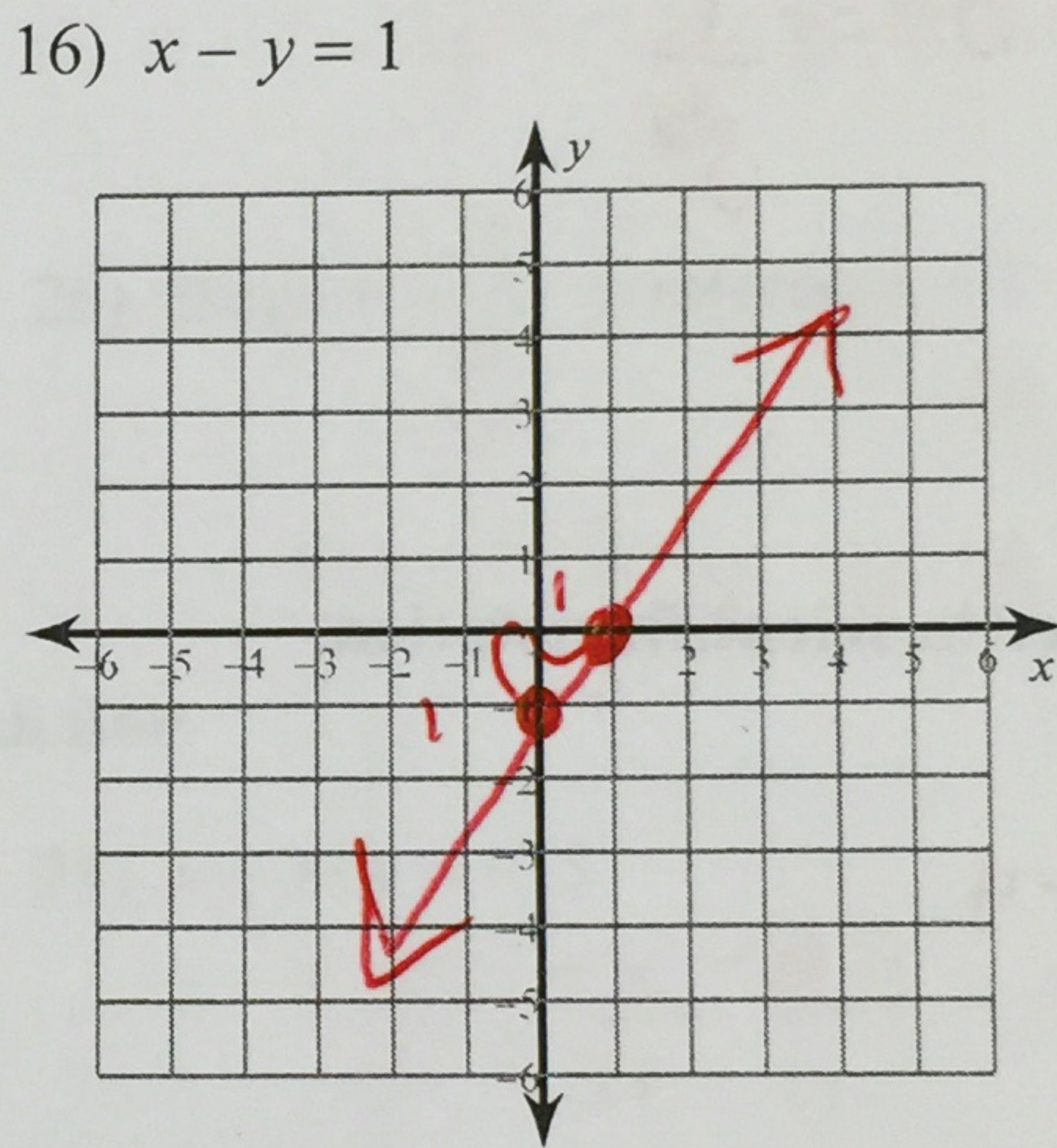
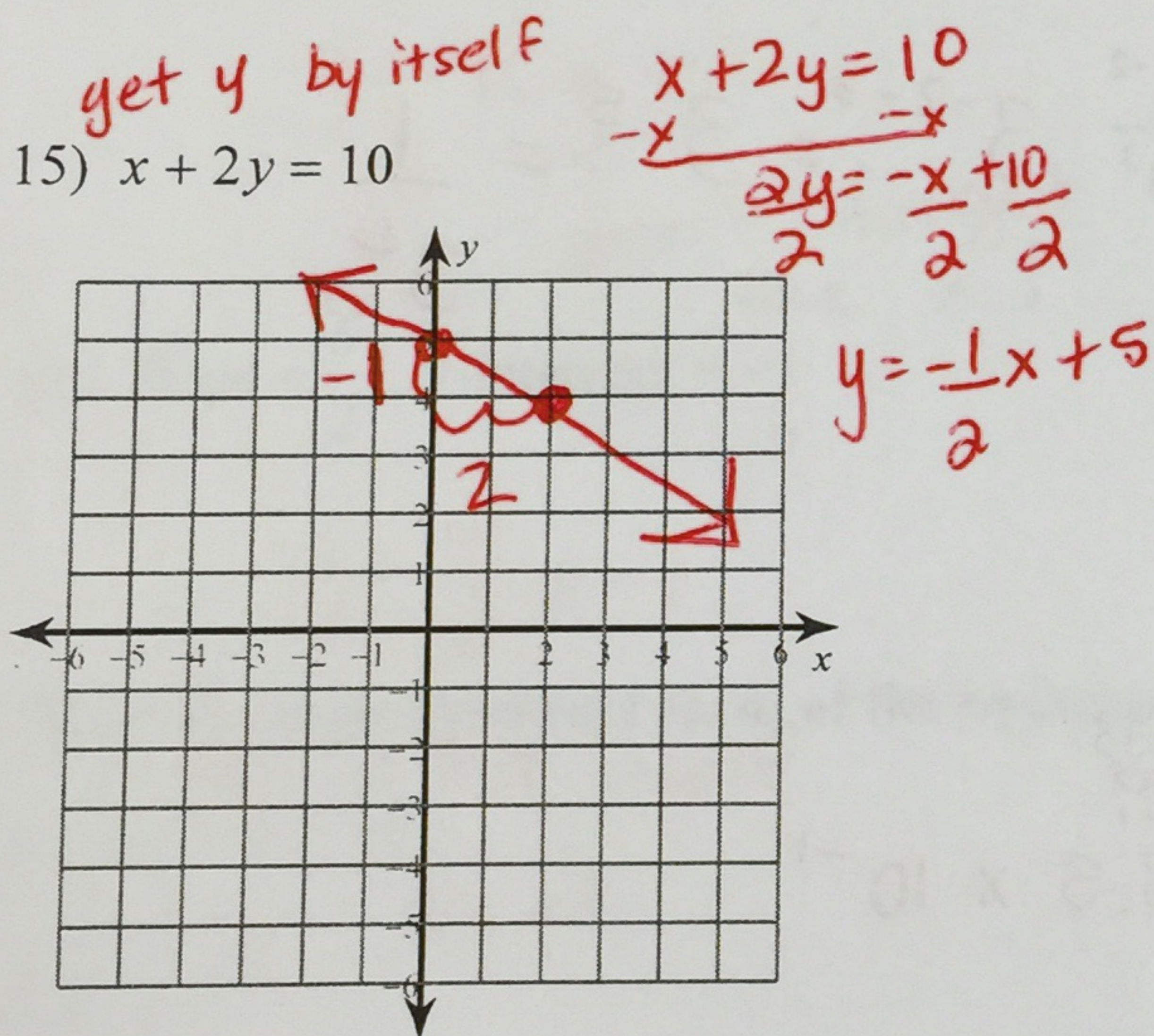
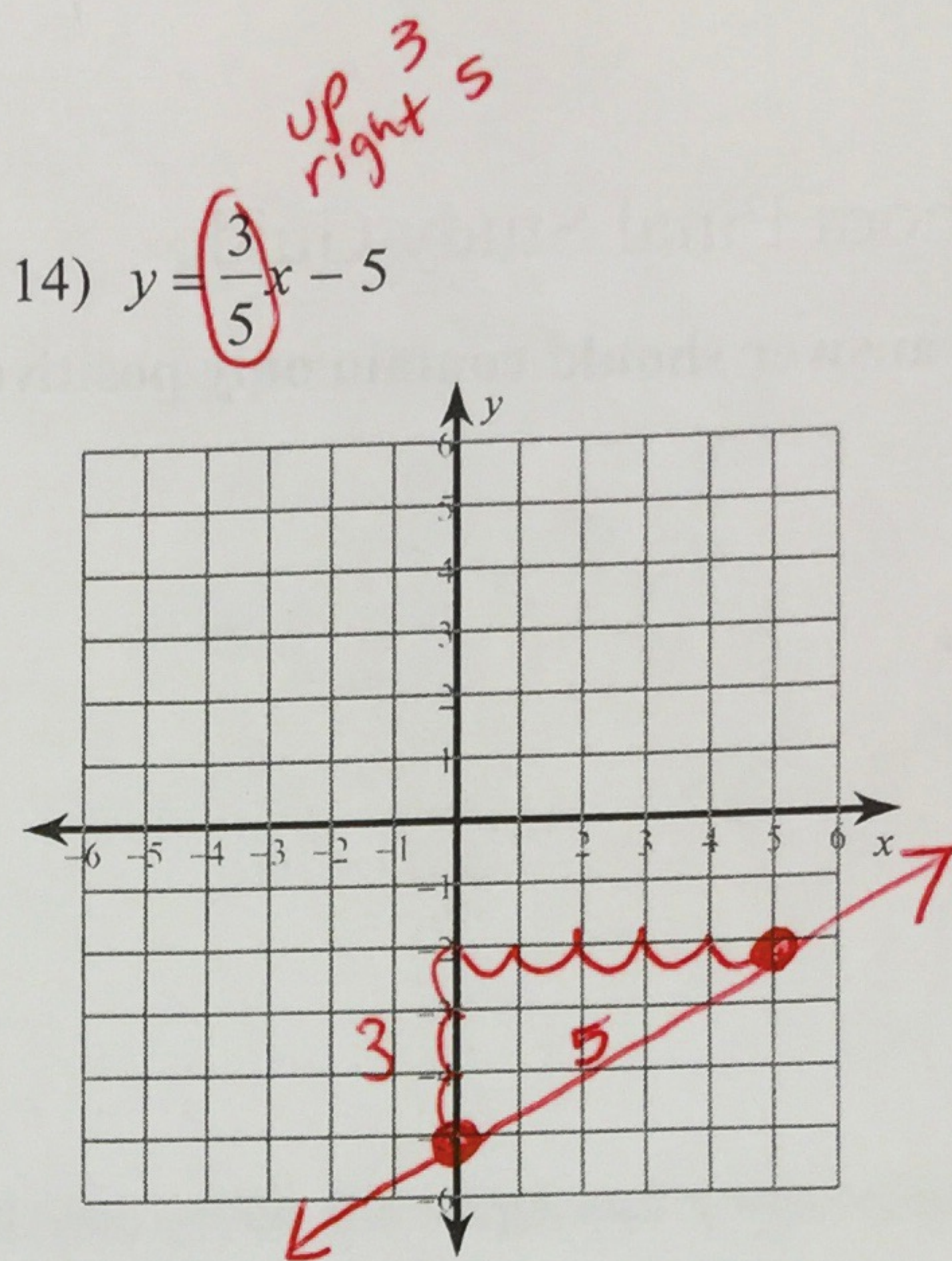
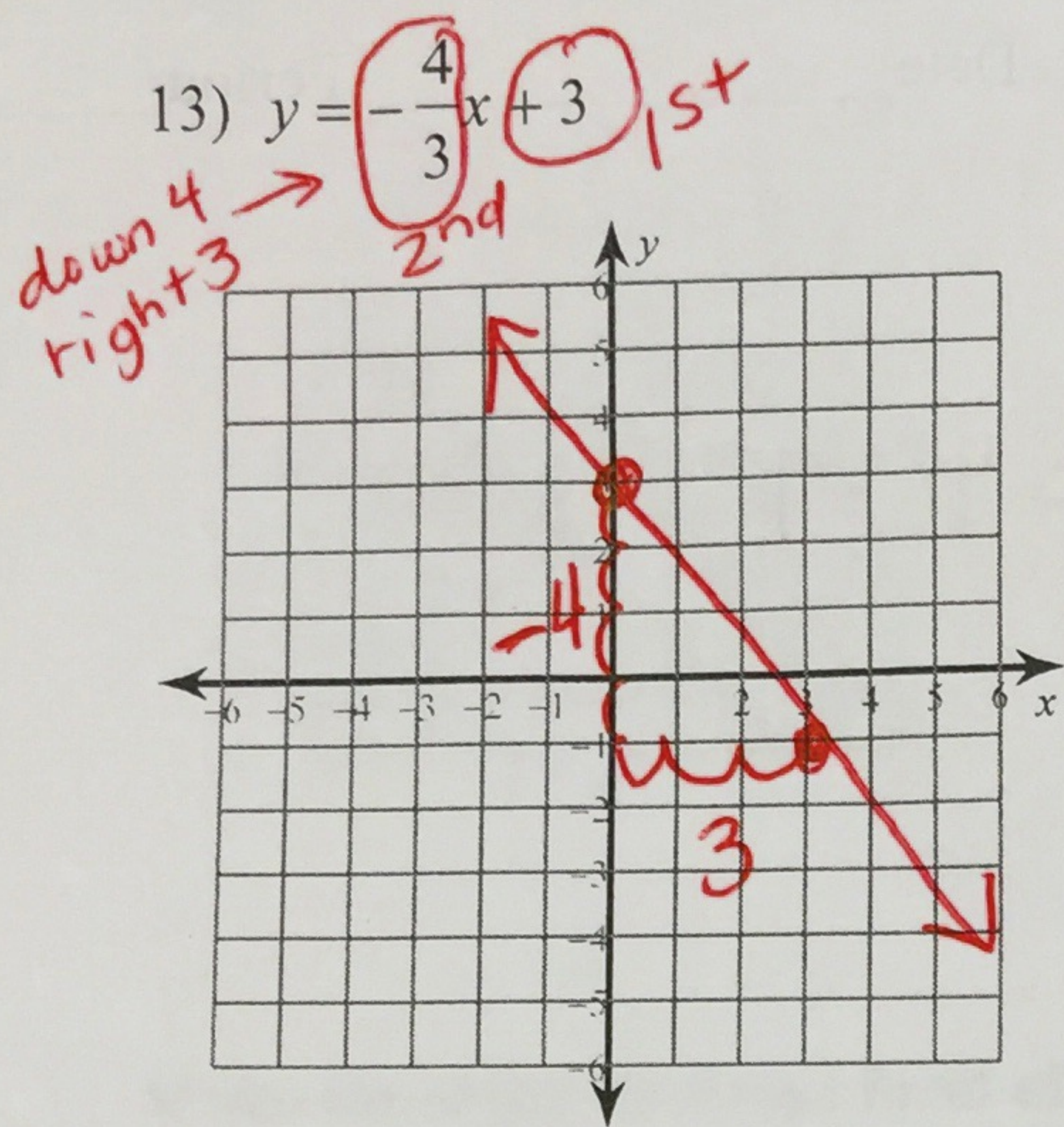
$$7.446 \times 10^5$$

12)  $(5.6 \times 10^{-2})(9.6 \times 10^{-5})$

$$5.376 \times 10^{-6}$$



Sketch the graph of each line.



Find the slope of the line through each pair of points.

17)  $(14, -16), (12, 14)$   $\frac{y_2 - y_1}{x_2 - x_1} = \frac{-16 - 14}{14 - 12} = \frac{-30}{2} = -15$

18)  $(10, 13), (3, -12)$   $\frac{y_2 - y_1}{x_2 - x_1} = \frac{13 - (-12)}{10 - 3} = \frac{25}{7}$

Find the slope of each line. always stuck to x

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

$\frac{7}{5}$

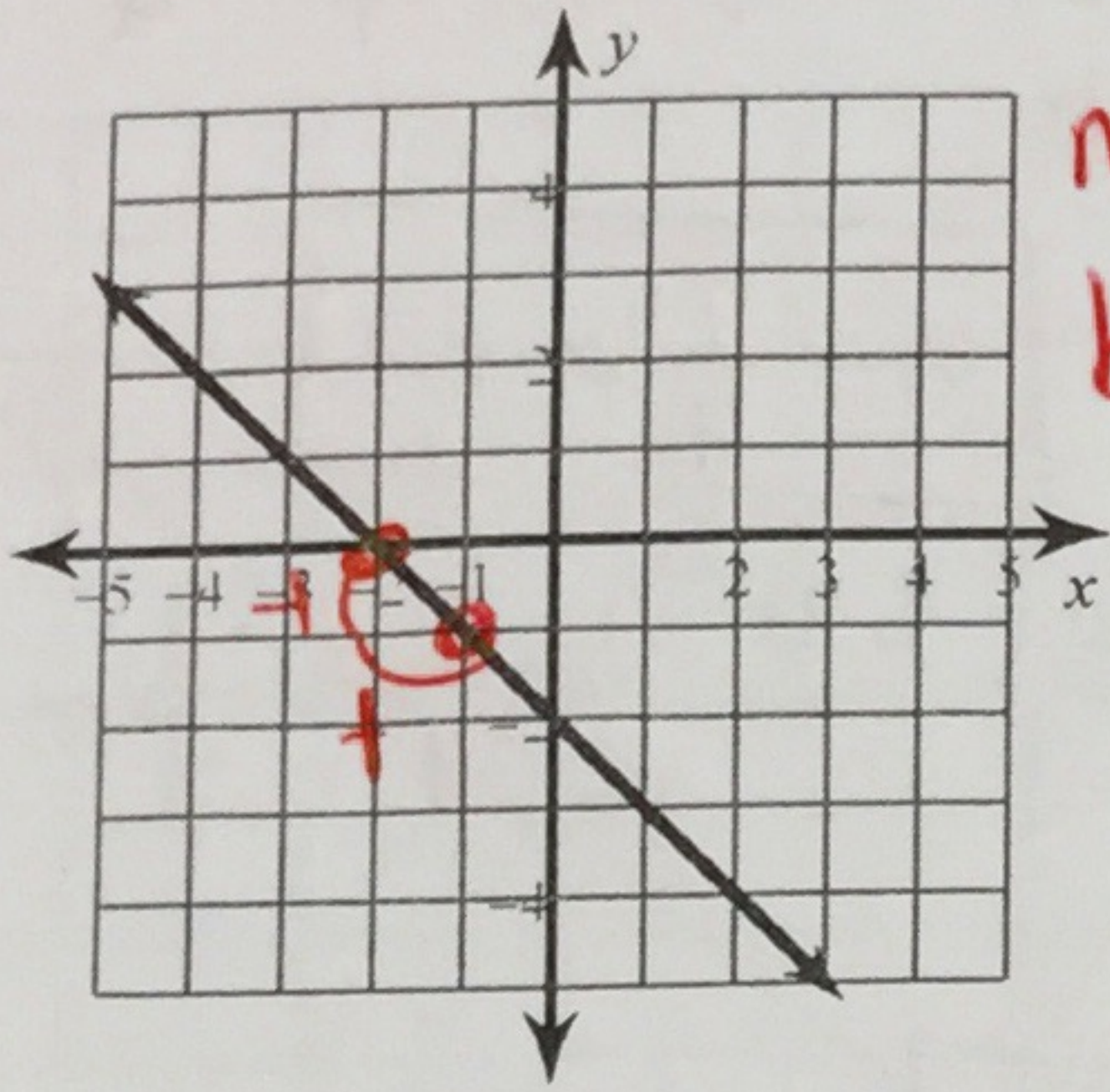
20)  $y = 1x + 1$

1



Write the slope-intercept form of the equation of each line.

21)

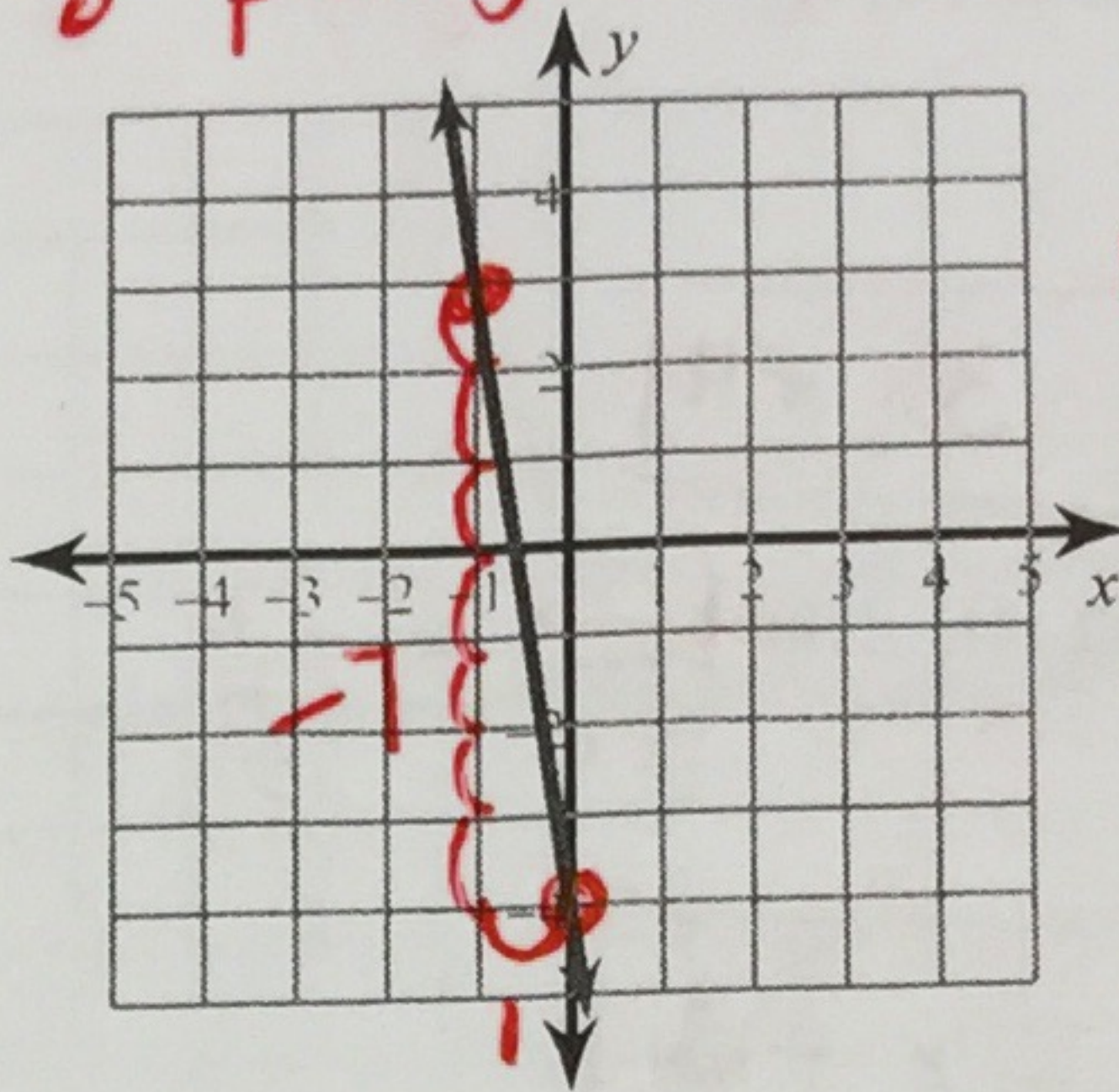


$$m = -1$$

$$b = -2$$

$$y = -x - 2$$

22)



$$m = -7$$

$$b = -4$$

$$y = -7x - 4$$

of find slope (from left to right)  
of find y-intercept  
o plug it into  $y = mx + b$

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

23) Slope =  $-10$ , y-intercept =  $5$

$$y = -10x + 5$$

↑ don't forget the x!

24) Slope =  $-\frac{3}{2}$ , y-intercept =  $1$

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

25) Slope =  $\frac{5}{2}$ , y-intercept =  $-1$

$$y = \frac{5}{2}x - 1$$

26) Slope =  $-\frac{2}{5}$ , y-intercept =  $3$

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

Write the slope-intercept form of the equation of each line.

27)  $4x + y = -1$

$$y = -4x - 1$$

get y by itself

28)  $x + 11y = -25$

$$\frac{11y}{11} = \frac{-x - 25}{11} \Rightarrow y = -\frac{1}{11}x - \frac{25}{11}$$

29)  $5x + y = -8$

$$y = -5x - 8$$

30)  $y = 7$

↑ this is it

Write the slope-intercept form of the equation of the line through the given point with the given slope.

31) through:  $(2, 3)$ , slope =  $\frac{5}{2}$

$$3 = \frac{5}{2}(2) + b$$

$$3 = 5 + b$$

$$-2 = b$$

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

32) through:  $(-3, 3)$ , slope =  $-1$

$$3 = -1(-3) + b$$

$$3 = 3 + b$$

$$0 = b$$

$$y = -x$$

33) through:  $(0, 4)$ , slope =  $\frac{4}{5}$

$$4 = \frac{4}{5}(0) + b$$

$$4 = b$$

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

34) through:  $(-5, -5)$ , slope =  $1$

$$-5 = 1(-5) + b$$

$$-5 = -5 + b$$

$$0 = b$$

$$y = x$$



Find slope first!

Write the slope-intercept form of the equation of the line through the given points.

35) through:  $(2, -2)$  and  $(0, 4)$   $m = \frac{-2-4}{2-0} = \frac{-6}{2} = -3$   
 $-2 = -3(2) + b$   
 $-2 = -6 + b$   
 $4 = b$   
 $y = -3x + 4$

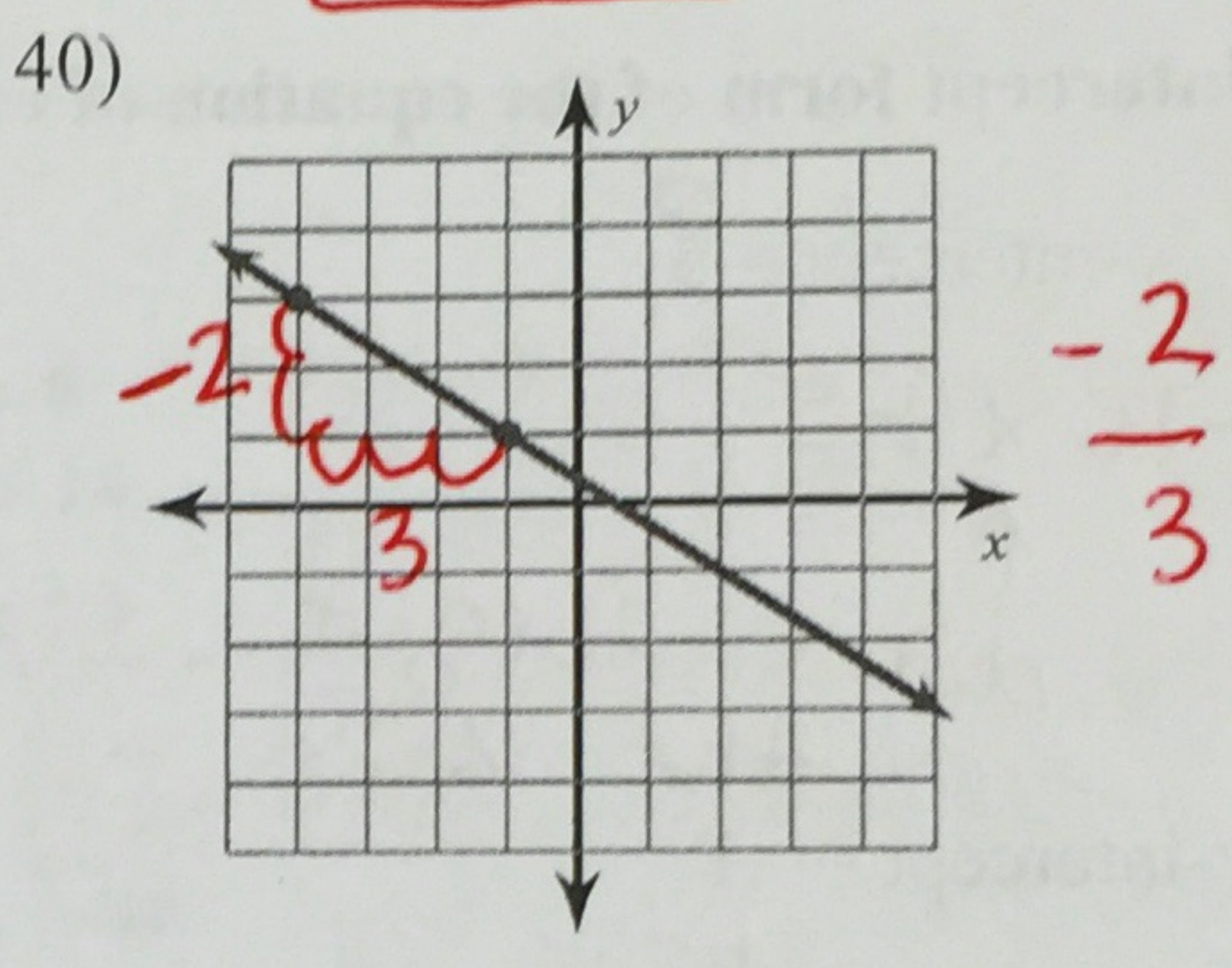
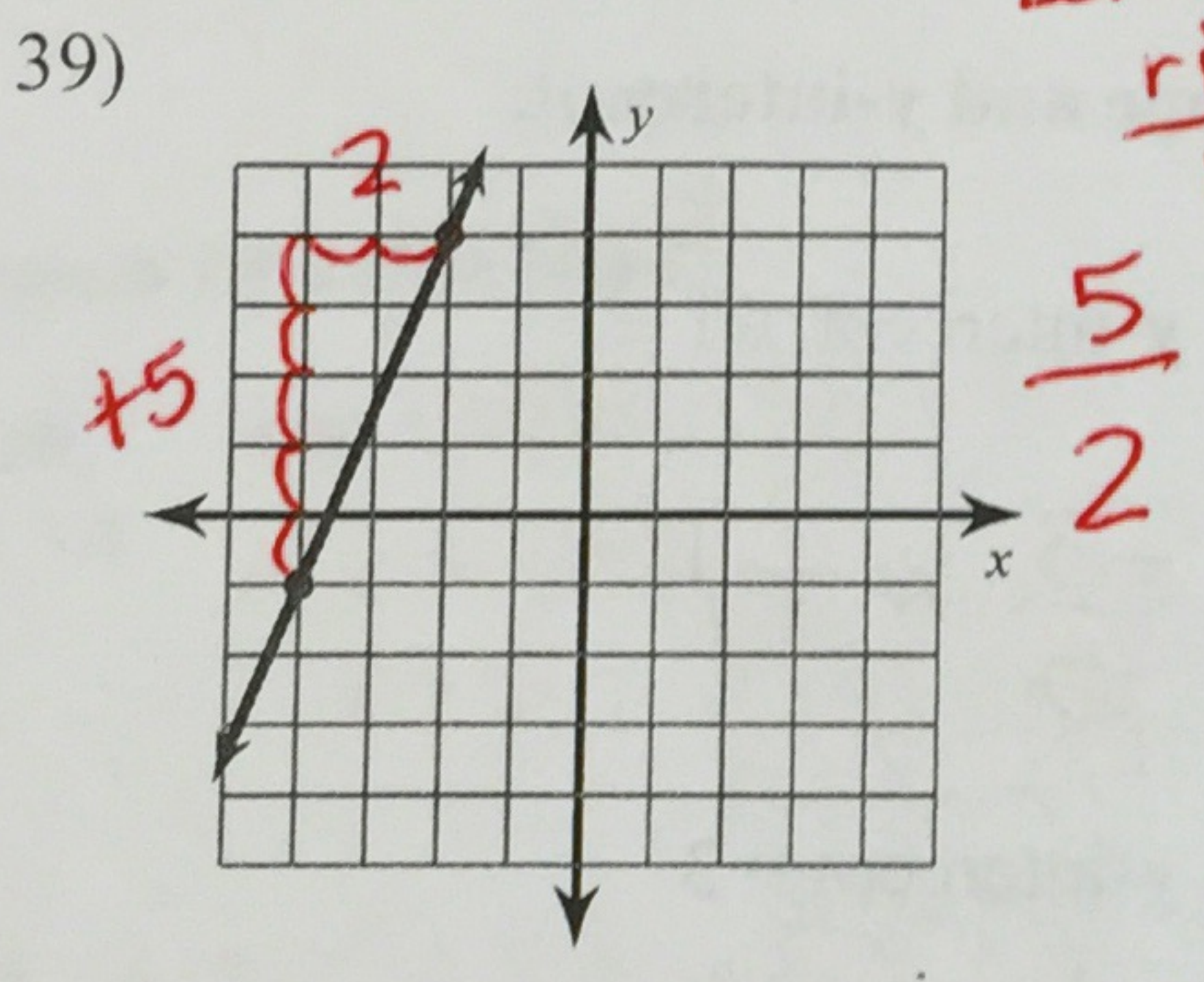
36) through:  $(0, 2)$  and  $(-4, -5)$   $m = \frac{2-(-5)}{0-(-4)} = \frac{7}{4}$   
 $2 = \frac{7}{4}(0) + b$   
 $2 = b$   
 $y = \frac{7}{4}x + 2$

37) through:  $(5, 1)$  and  $(0, 2)$   $m = \frac{1-2}{5-0} = -\frac{1}{5}$   
 $2 = -\frac{1}{5}(0) + b$   
 $2 = b$   
 $y = -\frac{1}{5}x + 2$

38) through:  $(0, 1)$  and  $(-4, 2)$   $m = \frac{1-2}{0-(-4)} = -\frac{1}{4}$   
 $1 = -\frac{1}{4}(0) + b$   
 $1 = b$   
 $y = -\frac{1}{4}x + 1$

Find the slope of each line.

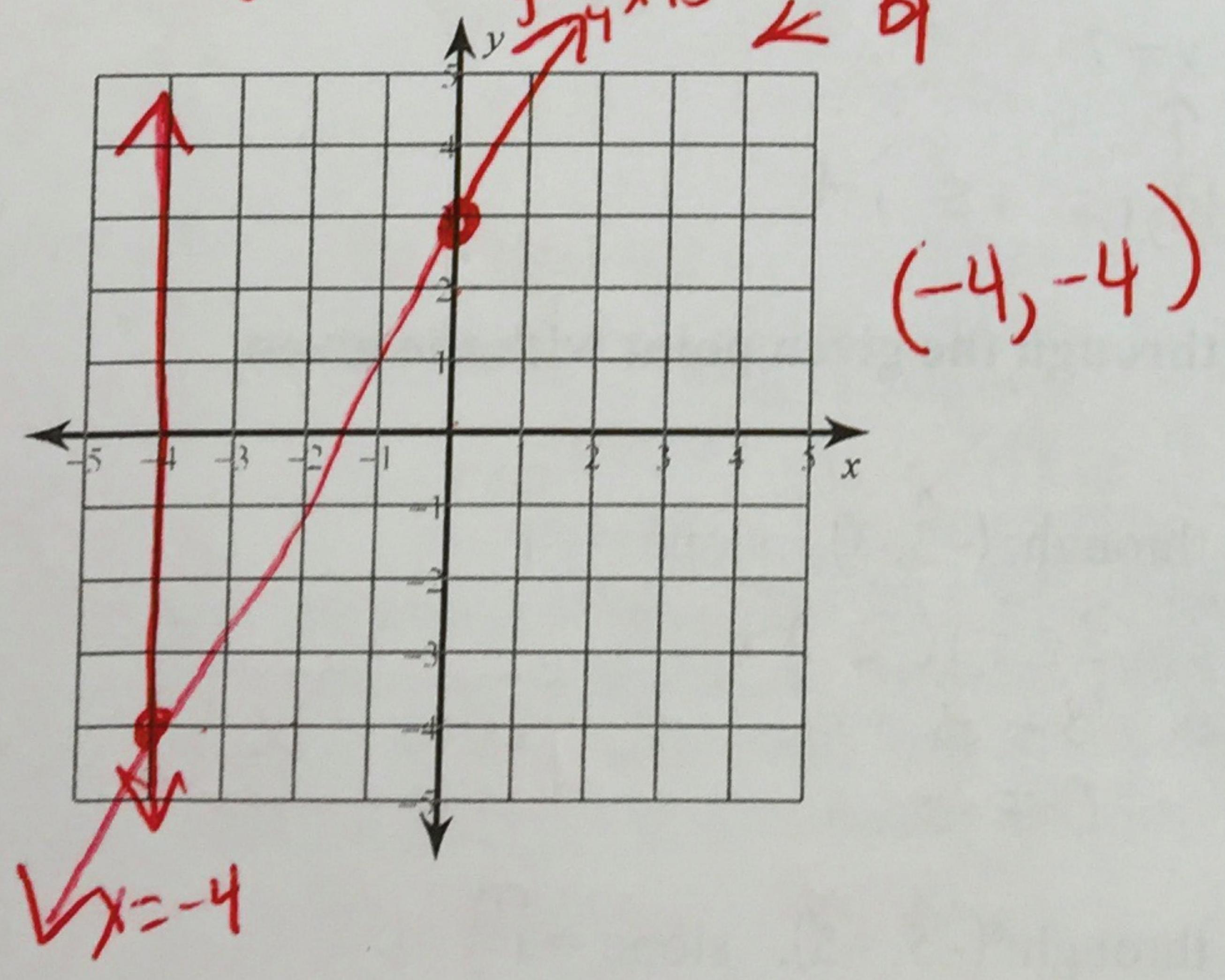
left to right!  
 rise  
 run



Solve each system by graphing.

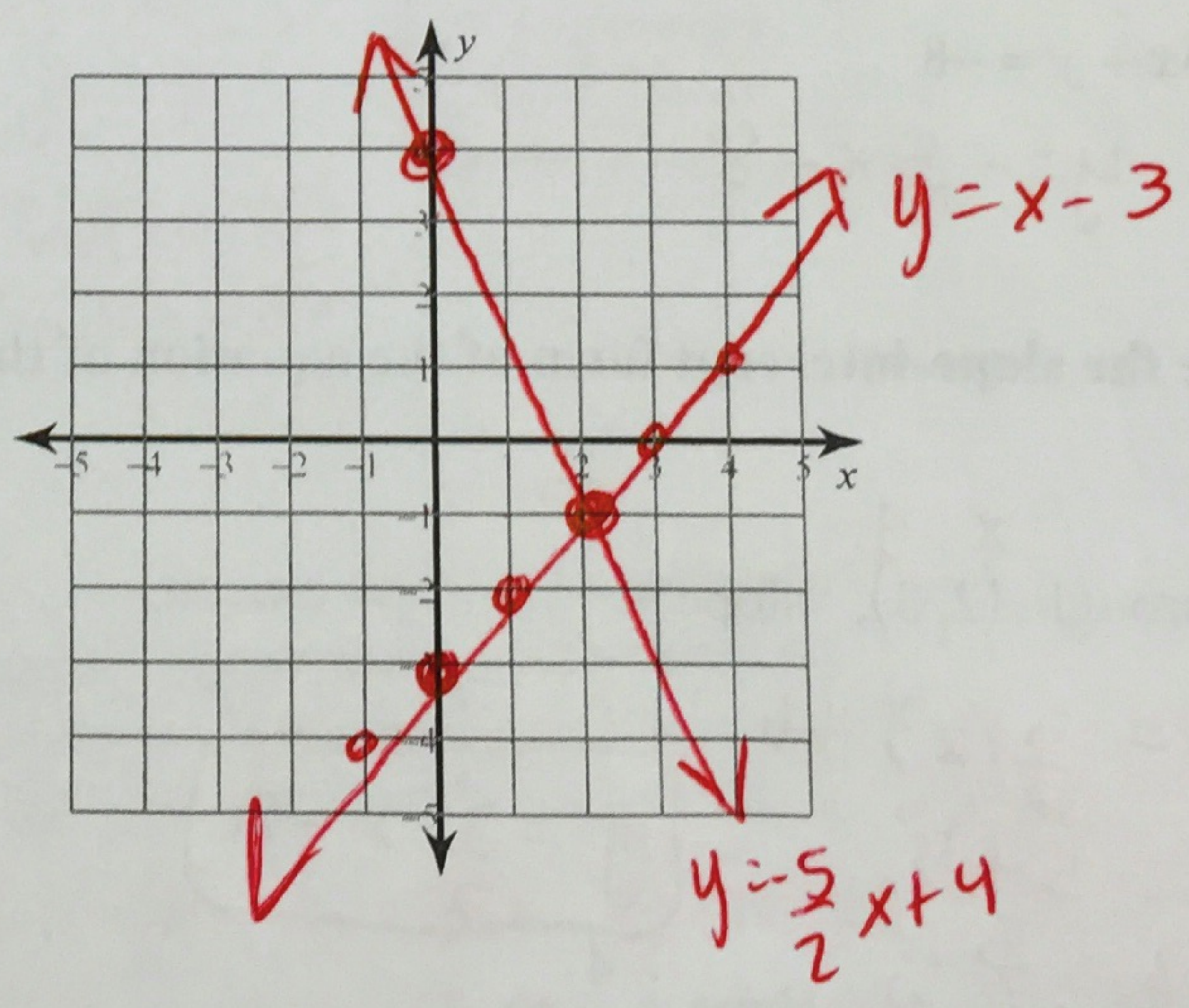
41)  $x = -4$   
 $y = \frac{7}{4}x + 3$

have to go backwards!  
 $y = \frac{7}{4}x + 3$   
 $\downarrow 7$   
 $\leftarrow 4$



42)  $y = x - 3$   
 $y = -\frac{5}{2}x + 4$

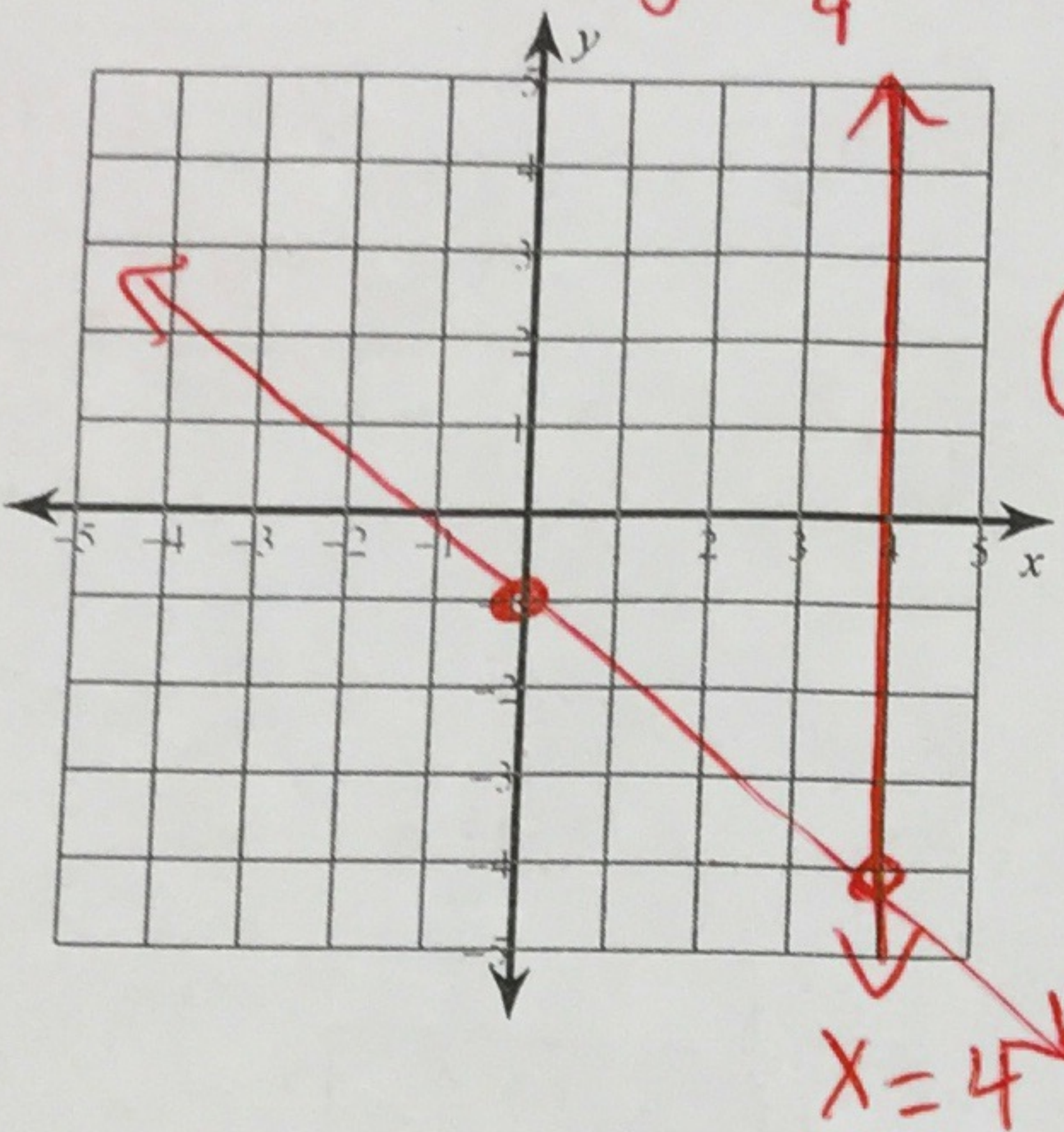
$(2, -1)$





43)  $x = 4$

$3x + 4y = -4 \rightarrow y = \frac{-3}{4}x - 1$

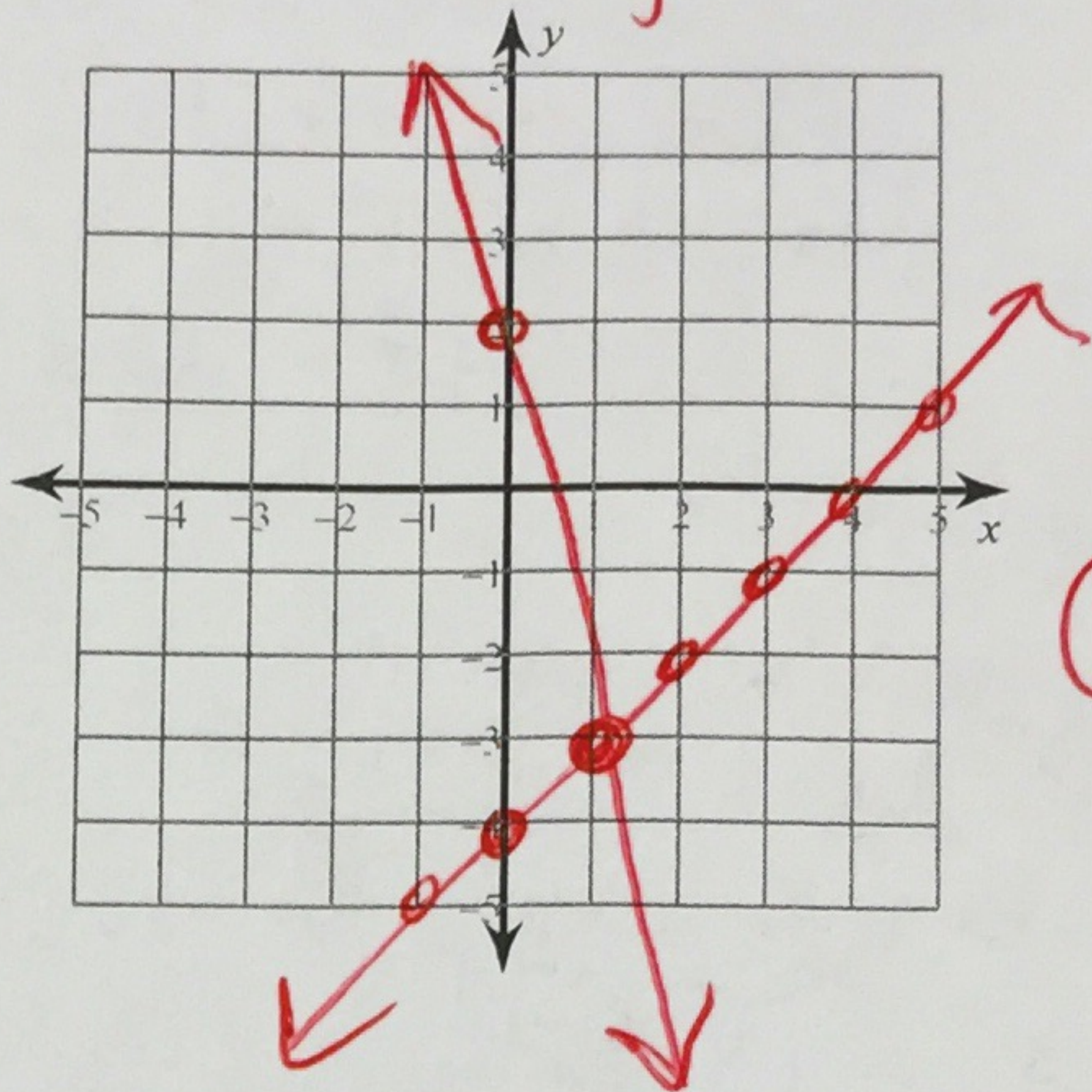


$(4, -4)$

$x = 4$

44)  $x - y = 4$   
 $5x + y = 2$

$y = x - 4$   
 $y = -5x + 2$



$(1, -3)$

Solve each system by substitution.

45)  $y = 4x - 20$      $4x - 20 = -2x + 10$   
 $y = -2x + 10$      $6x = 30$

$y = 4(5) - 20$   
 $y = 0$

$x = 5$      $(5, 0)$

47)  $x + 4y = 5$      $x = -4y + 5$   
 $-2x + 5y = -10$

$-2(-4y + 5) + 5y = -10$   
 $8y - 10 + 5y = -10$   
 $13y = 0$   
 $y = 0$

$(5, 0)$

$x = -4(0) + 5$   
 $x = 5$

46)  $7x + 4y = 6$      $7x + 4(-8x + 14) = 6$   
 $y = -8x + 14$

$7x - 32x + 56 = 6$   
 $-25x = -50$   
 $x = 2$

48)  $-8x + 8y = 16$   
 $4x - y = -23$      $y = 4x + 23$

$-8x + 8(4x + 23) = 16$   
 $-8x + 32x + 184 = 16$   
 $24x = -168$   
 $x = -7$

$y = 4(-7) + 23$   
 $y = -28 + 23$   
 $y = -5$

$(-7, -5)$

Solve each system by elimination.

49)  $5x - 10y = 0$      $5x - 10(a) = 0$   
 $-5x - 3y = -26$      $5x - 20 = 0$

$-13y = -26$   
 $y = 2$

$5x = 20$   
 $x = 4$      $(4, 2)$

50)  $6x + 3y = 30$   
 $-5x - 3y = 30$

$-11x = 0$   
 $x = 0$

$(0, -10)$

51)  $-18x - 7y = 21$   
 $-2(-9x - 2y = 6)$

$18x + 4y = -12$   
 $-3y = 9$   
 $y = -3$

$-18x - 7(-3) = 21$   
 $-18x + 21 = 21$   
 $-18x = 0$   
 $x = 0$      $(0, -3)$

$6(0) + 3y = 30$   
 $-3y = 30$   
 $y = -10$

52) Sumalee and Amy are selling cheesecakes for a school fundraiser. Customers can buy French silk cheesecakes and strawberry cheesecakes. Sumalee sold 1 French silk cheesecake and 5 strawberry cheesecakes for a total of \$82. Amy sold 5 French silk cheesecakes and 10 strawberry cheesecakes for a total of \$200. Find the cost each of one French silk cheesecake and one strawberry cheesecake.

$f + 5s = 82$

$5f + 10s = 200$

$-5f - 25s = -410$   
 $-15s = -210$

$s = 14$

$f + 5(14) = 82$

$f + 70 = 82$

$f = 12$

French = \$12  
Strawberry = \$14



- 53) Anjali and Asanji each improved their yards by planting daylilies and shrubs. They bought their supplies from the same store. Anjali spent \$112 on 14 daylilies and 7 shrubs. Asanji spent \$108 on 7 daylilies and 10 shrubs. What is the cost of one daylily and the cost of one shrub?

$$\begin{array}{r} 14d + 7s = 112 \\ -2(7d + 10s = 108) \\ \hline -14d - 20s = -216 \\ \hline -13s = -104 \\ s = 8 \end{array}$$

$$\begin{array}{r} 14d + 7(8) = 112 \\ 14d + 56 = 112 \\ 14d = 56 \\ d = 4 \end{array}$$

shrub = \$8  
daylily = \$4

Solve each proportion.

54)  ~~$\frac{k-2}{8} = \frac{8}{10}$~~   $10(k-2) = 64$   
 $10k - 20 = 64$   
 $10k = 84$   
 $k = 8.4$

55)  ~~$\frac{p-6}{3} = \frac{3}{2}$~~   $2(p-6) = 9$   
 $2p - 12 = 9$   
 $2p = 21$   
 $p = 10.5$

Find the distance between each pair of points.  $\sqrt{(x-x)^2 + (y-y)^2}$

56)  $(-2, 8), (2, 2)$   $\sqrt{(-2-2)^2 + (8-2)^2}$   
 $\sqrt{(-4)^2 + (6)^2}$   
 $\sqrt{16 + 36}$   
 $\sqrt{52} \approx 7.21$

57)  $(2, -5), (-1, 2)$   $\sqrt{(2-(-1))^2 + (-5-2)^2}$   
 $\sqrt{3^2 + (-7)^2}$   
 $\sqrt{9 + 49}$   
 $\sqrt{58} \approx 7.62$

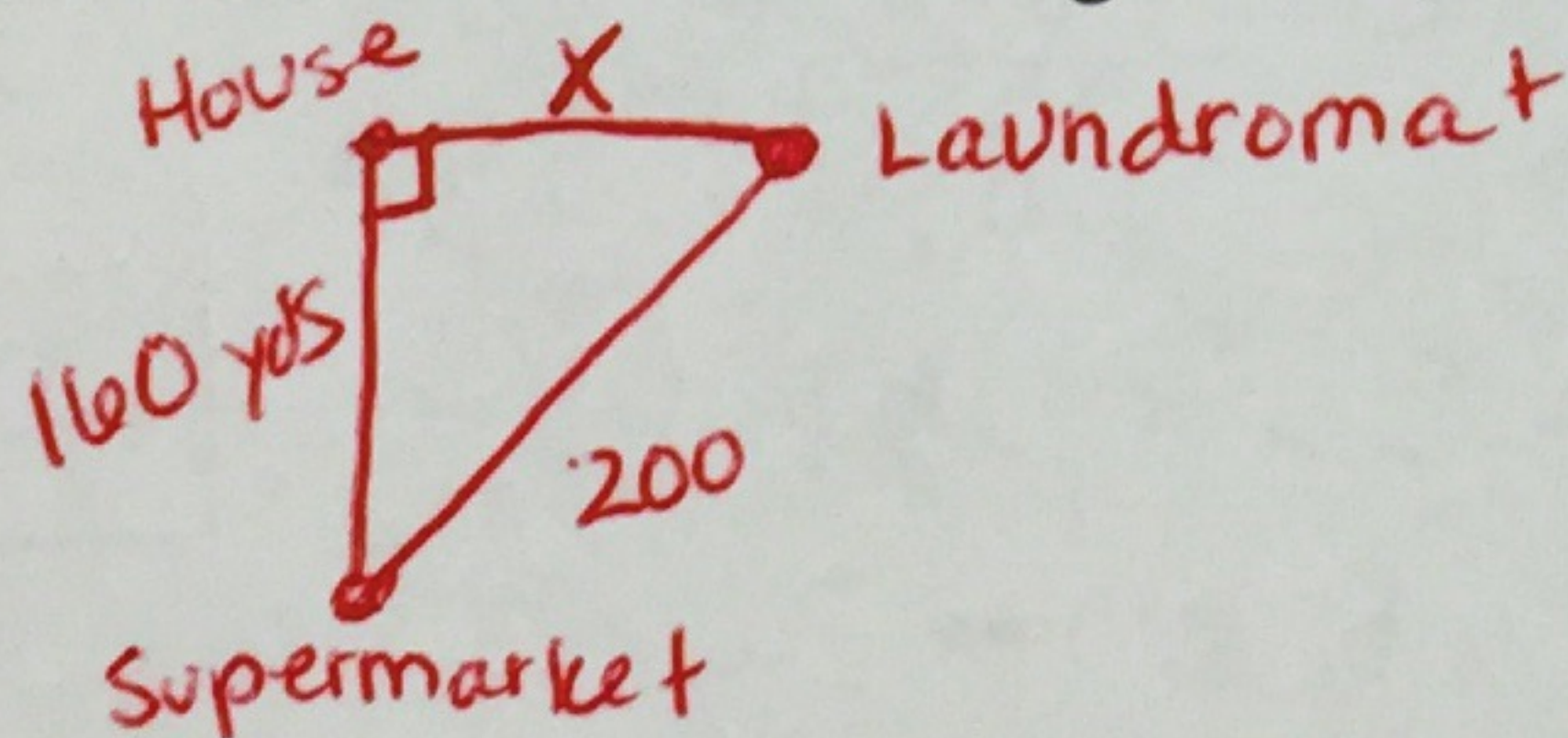
Use  $\Delta D \approx$  button!

Solve using the rules of scientific notation.

58)  $(5.01 \times 10^{13}) - (4.1 \times 10^{12})$  *change to higher power*  
 $(5.01 - .41) \times 10^{13}$   
 $4.6 \times 10^{13}$

59)  $(1.2 \times 10^9) + (7.77 \times 10^{12})$  *move 3 places*  
 $(.0012 + 7.77) \times 10^{12}$   
 $7.7712 \times 10^{12}$

- 60) Betty Jo went to the supermarket which is 160 yards due south from her house. She then went 200 yards north east to the laundromat. In a straight line, how far is she from her house when she is at the laundromat?



Pythagorean Theorem!  
 you have c and a, need to find b.

$\sqrt{200^2 - 160^2} = 120 \text{ yds}$

- 61) Jimmy Joe bought a barn that he wants to fill to the top with grits. The base of the barn is a cylinder and the top of the barn is a cone shape. Use the diagram to determine the volume of the barn. Jimmy Joe knows that a bag of grits fills up  $10 \text{ ft}^3$  of space. How many bags of grits should he buy?

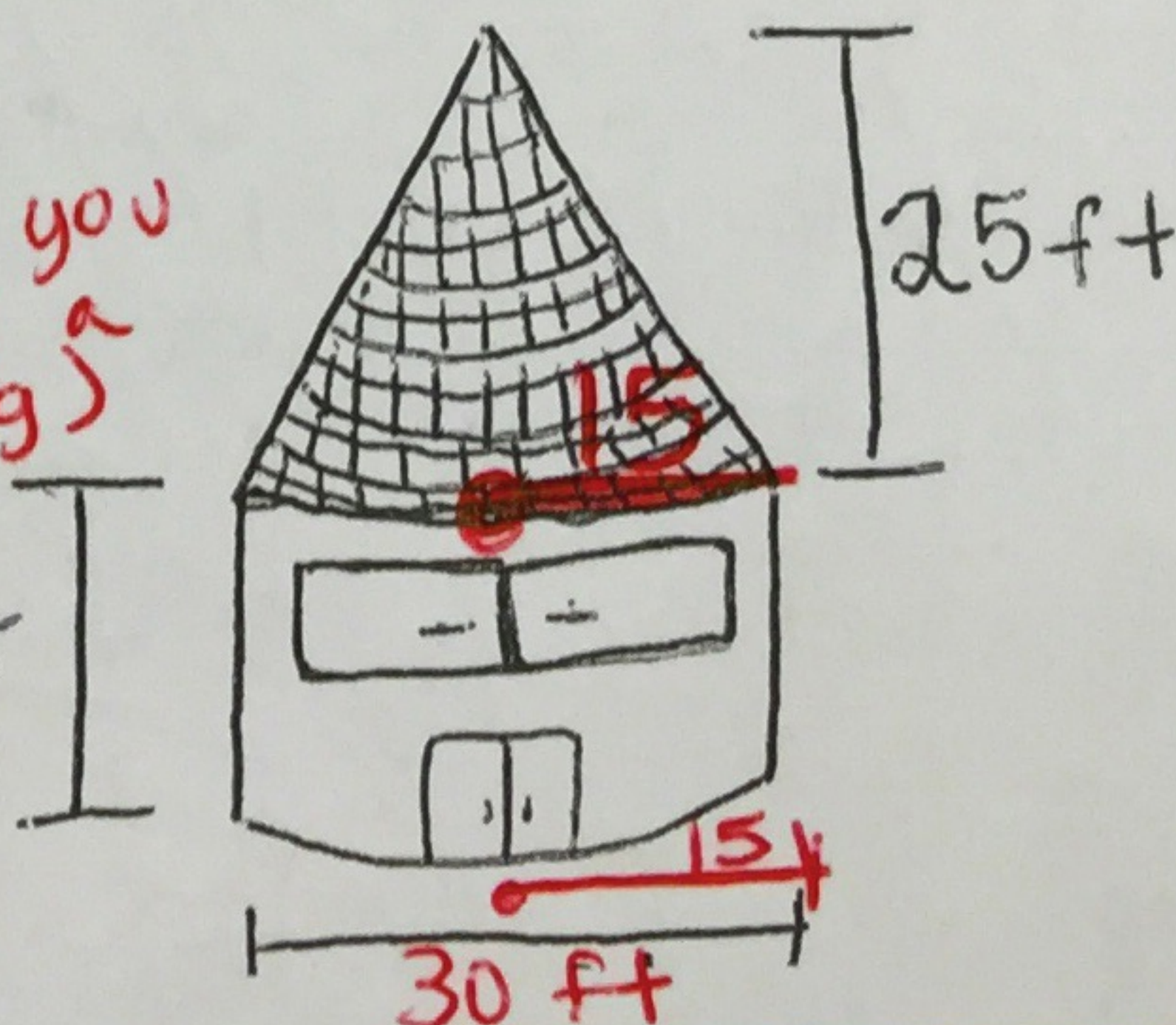
Volume of barn:  $20,027.7 \text{ ft}^3$

# of bags of grits he should buy: about 2003 (round up b/c you have to buy a whole bag)

Cone  
 $\frac{\pi \cdot r^2 \cdot h}{3} \rightarrow \frac{\pi \cdot 15^2 \cdot 25}{3}$

Cylinder  
 $\pi \cdot r^2 \cdot h \rightarrow \pi \cdot 15^2 \cdot 20$

$\approx 5890.5 + \approx 14137.2$



$\Delta D \approx$  button!