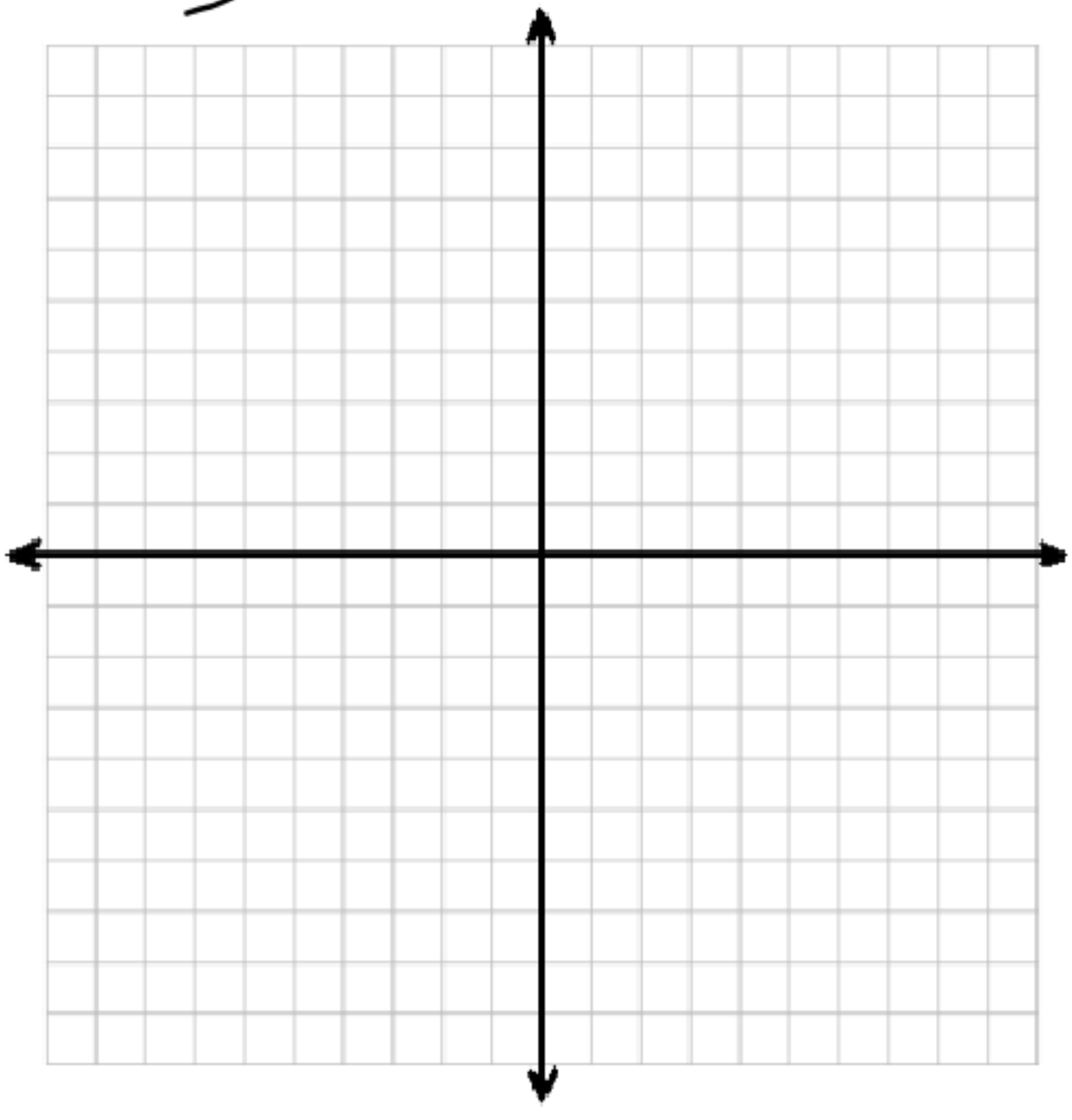
MAY 30

SLOPE

Y INTERCEPT

FORM

CONT.



#27 on page 428

$m = 2$ $b = 3$ $y = mx + b$

$y = 2x + 3$

30

$m = -5$

$b = -7$

$y = mx + b$

OPTIONAL → $y = -5x + (-7)$

$+5x \quad +7$

$y = -5x - 7$

$+5x + y + 7 = 0$

32 $y = mx + b$ $m = \frac{2}{3}$ $b = -2$

$-y$ $-y$

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

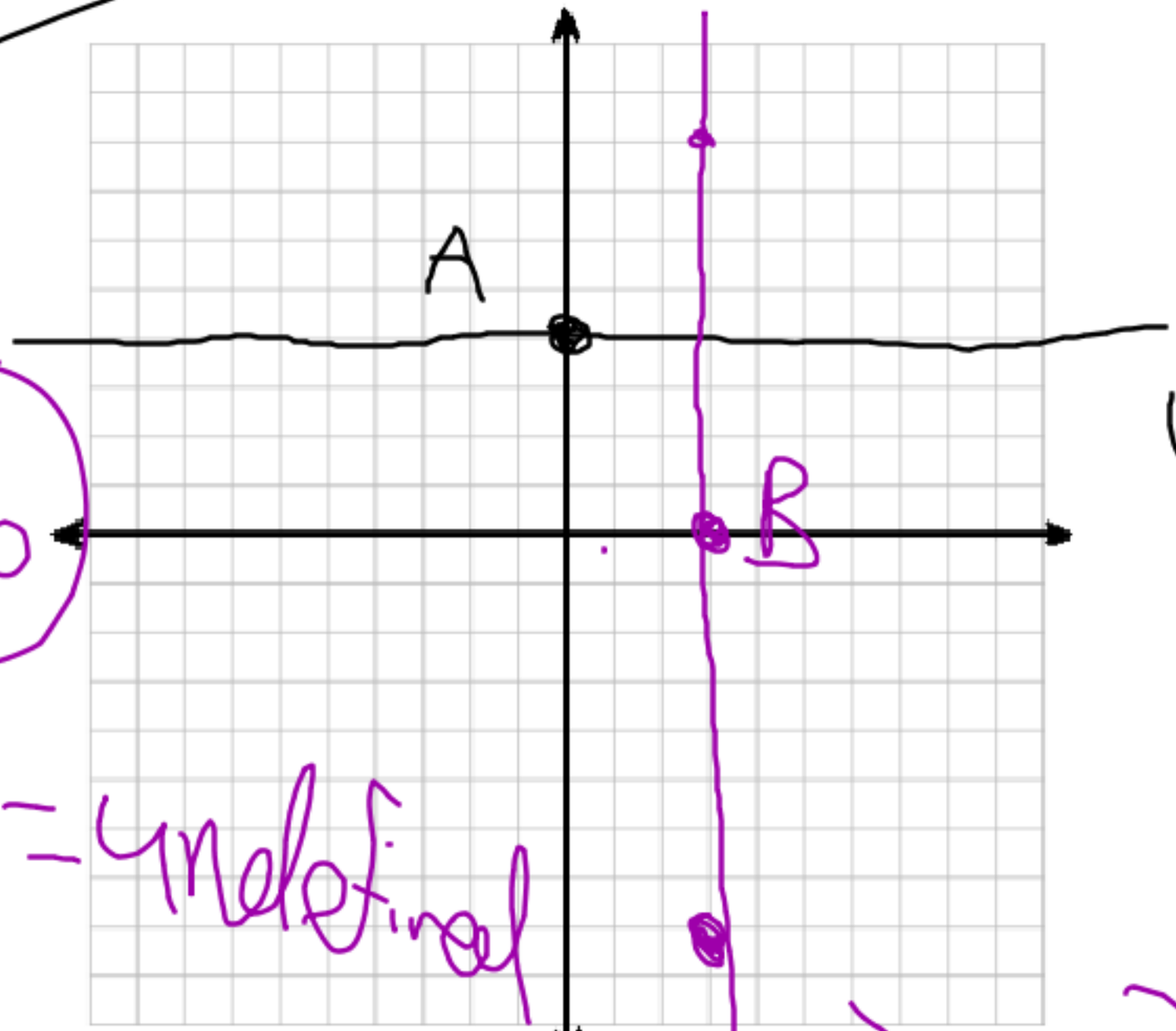
$0 = \left(\frac{2}{3}x - y - 2\right)3$

$0 = 2x - 3y - 6$

S.N.

$\frac{2}{3} \times \frac{3}{1}$

35)



$m = 0$

$b = 4$

$y = 0x + 4$

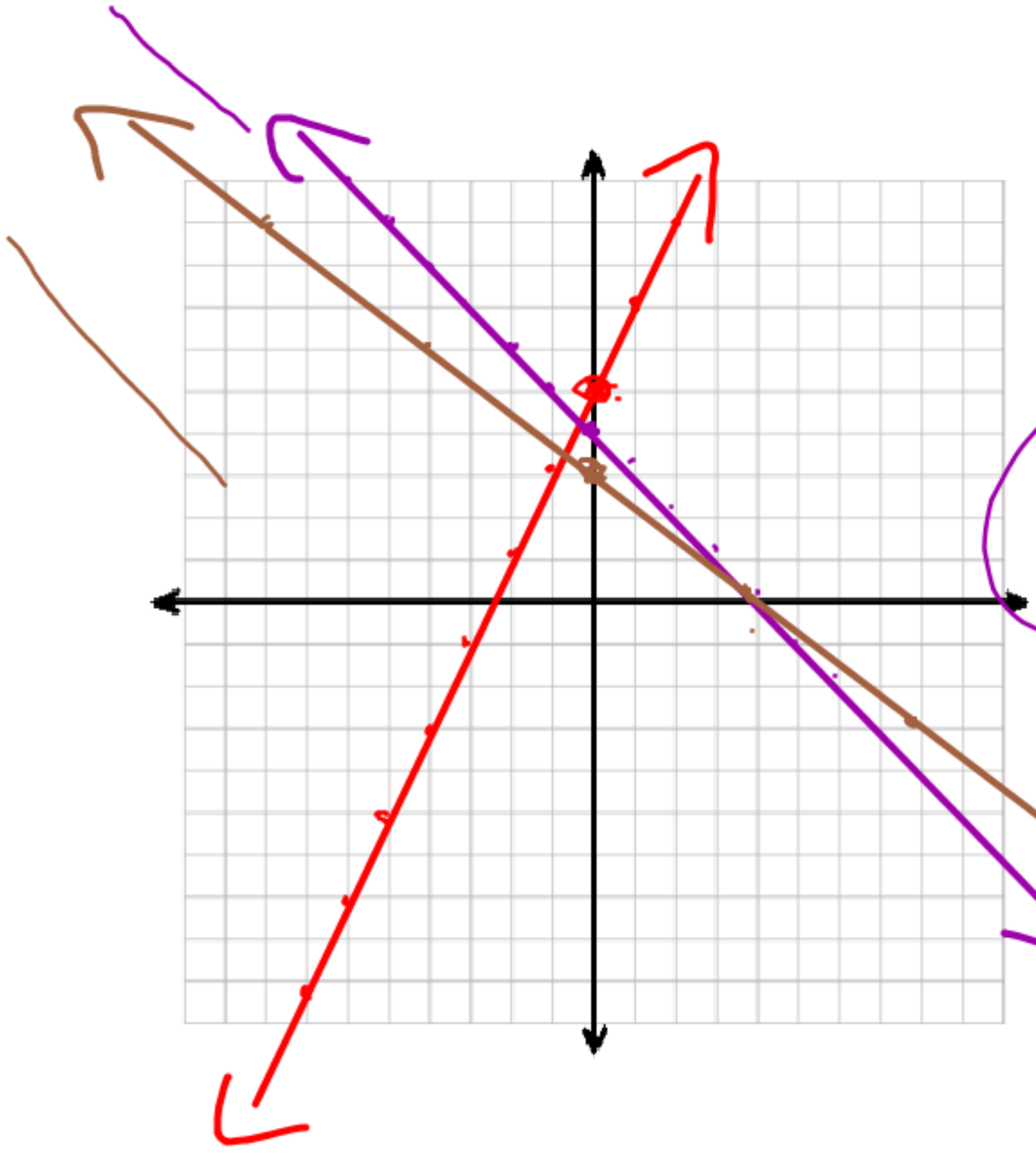
$y = 4$

36)

$m =$ undefined

$b =$ undefined

$x = 3$



39 $y = 2x + 5$

$\frac{\text{rise}}{\text{run}} = \frac{2}{1}$

41 $y = -\frac{1}{1}x + 4$

$\frac{\text{rise}}{\text{run}} = \frac{-1}{1}$

43 $y = \frac{-3}{4}x + 3$

Practice

A

Find the slope and y-intercept of each line.

1. $y = 3x + 1$
2. $y = \frac{1}{2}x - 2$
3. $y = -4x + 3$
4. $x + y = 5$
5. $x + y - 7 = 0$
6. $y + 4 = 5x$
7. $y - 2x = 0$
8. $y = 3$

Find the slope and y-intercept of each line.

9. $4x + 2y = 3$
10. $x - y = 4$
11. $3x + 2y + 6 = 0$
12. $2y + 6 = 0$
13. $x - 3y - 9 = 0$
14. $5x + 2y = 10$
15. $22x + 0.5y - 1 = 0$
16. $0 = x - 2y - 4$
17. $6.4x = 0.8y$
18. $1.2x - 0.3y = 0.12$

Find the slope and y-intercept of the line through the given points.

19. (1, 3) and (3, 5)
20. (2, 3) and (−1, 6)
21. (−7, −2) and (−1, −8)
22. (−1, −2) and (−5, −10)
23. (2, 1) and (6, 4)
24. (−1, 2) and (3, 4)
25. (6, 9) and (−2, −5)
26. (4, −5) and (−2, 3)

Given the slope and y-intercept, write an equation of the line in the slope and y-intercept form. Then, write the equation in standard form.

27. $m = 2; b = 3$
28. $m = 3; b = -2$
29. $m = -4; b = 6$
30. $m = -5; b = -7$
31. $m = \frac{1}{2}; b = 1$
32. $m = \frac{2}{3}; b = -2$
33. $m = -0.5; b = 0$
34. $m = -\frac{2}{5}; b = -\frac{1}{3}$

Write an equation for each of the following lines.

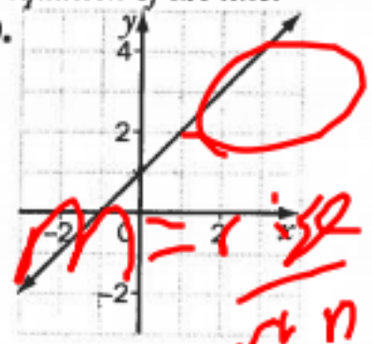
35. horizontal line through A(0, 4)
36. vertical line through B(3, 0)
37. vertical line through C(−1, 2)
38. horizontal line through D(1, −3)

Graph each line.

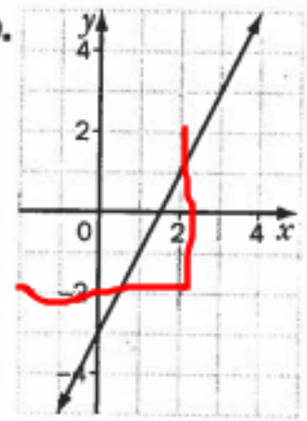
39. $y = 2x + 5$
40. $y = 3x - 1$

Find the slope and y-intercept of each line. Then, write an equation of the line.

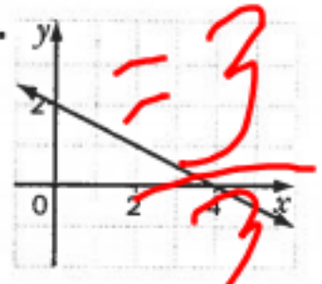
49.



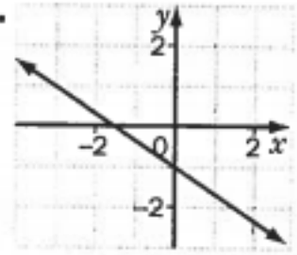
50.



51.



52.



Applications and Problem Solving

B

53. Algebra An equation of a line is $y = 2x + b$. Find the value of b if the line passes through the point

a) (1, 2)
b) (−3, 5)
c) (2, −6)
d) (−1, −3)

54. Algebra An equation of a line is $y = mx + 3$. Find the value of m if the line passes through the point

a) (2, 1)
b) (−4, 5)
c) (4, −5)
d) (−1, −6)

55. Explain why these lines belong to a family.

$y = \frac{3}{2}x - 1$
$2x + y + 1 = 0$
$3x - 2y - 2 = 0$
$y + 1 = 0$

56. Box of crackers The equation $m = 6n + 55$ relates the mass, m grams, of a box of crackers to the number of crackers, n, in the box.

a) Graph the line.

Practice

A

Find the slope and y-intercept of each line.

1. $y = 3x + 1$
2. $y = \frac{1}{2}x - 2$
3. $y = -4x + 3$
4. $x + y = 5$
5. $x + y - 7 = 0$
6. $y + 4 = 5x$
7. $y - 2x = 0$
8. $y = 3$

Find the slope and y-intercept of each line.

9. $4x + 2y = 3$
10. $x - y = 4$
11. $3x + 2y + 6 = 0$
12. $2y + 6 = 0$
13. $x - 3y - 9 = 0$
14. $5x + 2y = 10$
15. $22x + 0.5y - 1 = 0$
16. $0 = x - 2y - 4$
17. $6.4x = 0.8y$
18. $1.2x - 0.3y = 0.12$

Find the slope and y-intercept of the line through the given points.

19. (1, 3) and (3, 5)
20. (2, 3) and (−1, 6)
21. (−7, −2) and (−1, −8)
22. (−1, −2) and (−5, −10)
23. (2, 1) and (6, 4)
24. (−1, 2) and (3, 4)
25. (6, 9) and (−2, −5)
26. (4, −5) and (−2, 3)

Given the slope and y-intercept, write an equation of the line in the slope and y-intercept form. Then, write the equation in standard form.

27. $m = 2, b = 3$
28. $m = 3; b = -2$
29. $m = -4; b = 6$
30. $m = -5; b = -7$
31. $m = \frac{1}{2}; b = 1$
32. $m = \frac{2}{3}; b = -2$
33. $m = -0.5; b = 0$
34. $m = -\frac{2}{5}; b = -\frac{1}{3}$

Write an equation for each of the following lines.

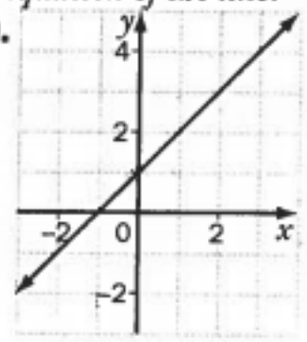
35. horizontal line through A(0, 4)
36. vertical line through B(3, 0)
37. vertical line through C(−1, 2)
38. horizontal line through D(1, −3)

Graph each line.

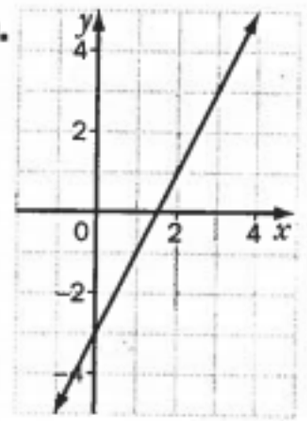
39. $y = 2x + 5$
40. $y = 3x - 1$

Find the slope and y-intercept of each line. Then, write an equation of the line.

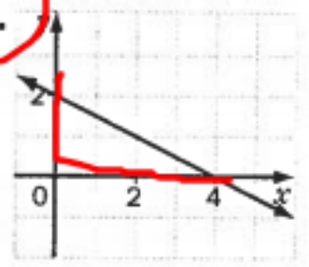
49.



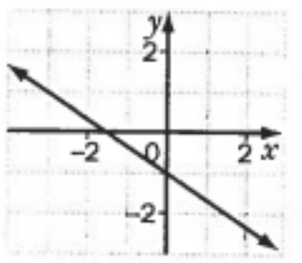
50.



51.



52.



Applications and Problem Solving

B

53. Algebra An equation of a line is $y = 2x + b$. Find the value of b if the line passes through the point
a) (4, 2) **b)** (−3, 5) **c)** (2, −6) **d)** (−1, −3)

54. Algebra An equation of a line is $y = mx + 3$. Find the value of m if the line passes through the point
a) (2, 1) **b)** (−4, 5) **c)** (4, −5) **d)** (−1, −6)

55. Explain why these lines belong to a family.

$y = \frac{3}{2}x - 1$ $\quad 2x + y + 1 = 0$
$5x - 2y - 2 = 0$ $\quad y + 1 = 0$

56. Box of crackers The equation $m = 6n + 55$ relates the mass, m grams, of a box of crackers to the number of crackers, n, in the box.
a) Graph the line.

(53)

$y = 2x + b$

Find b

a) (4, 2)

x, y

$x = 4$

$y = 2$

$2 = 2(4) + b$

$2 = 8 + b$

$-8 \quad -8$

$2 - 8 = b$

$b = -6$

53 d) $y = 2x + b$

$(-1, -3)$

$-3 = 2(-1) + b$

$-3 = -2 + b$

$+2 \quad +2$

$-3 + 2 = b$

$\rightarrow b = -1$

54) b) $y = mx + 3$

$(-4, 5)$

x y

$5 = -4m + 3$

$-3 \quad -3$

$-4m = 2$

$\frac{-4m}{-4} = \frac{2}{-4}$

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

54 c) $y = mx + 3$

$(4, -5)$

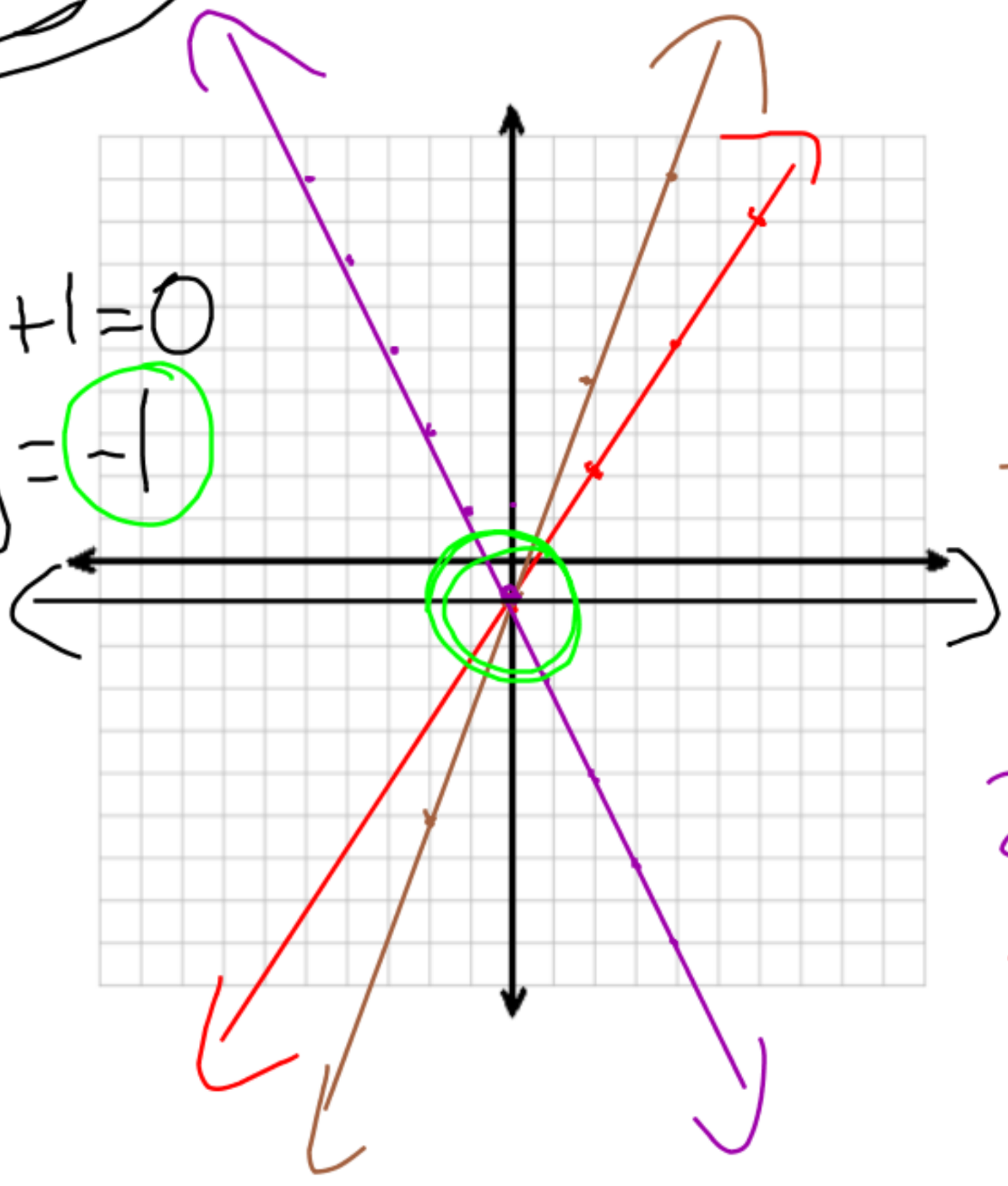
$m = -2$

$-5 = 4m + 3$

$-3 \quad\quad -3$

$\frac{-8}{4} = \frac{4m}{4}$

55



$y+1=0$

$y=-1$

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

$5x-2y-2=0$

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

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

$2x+y+1=0$

$-2x \quad -1$

$y=-2x-1$

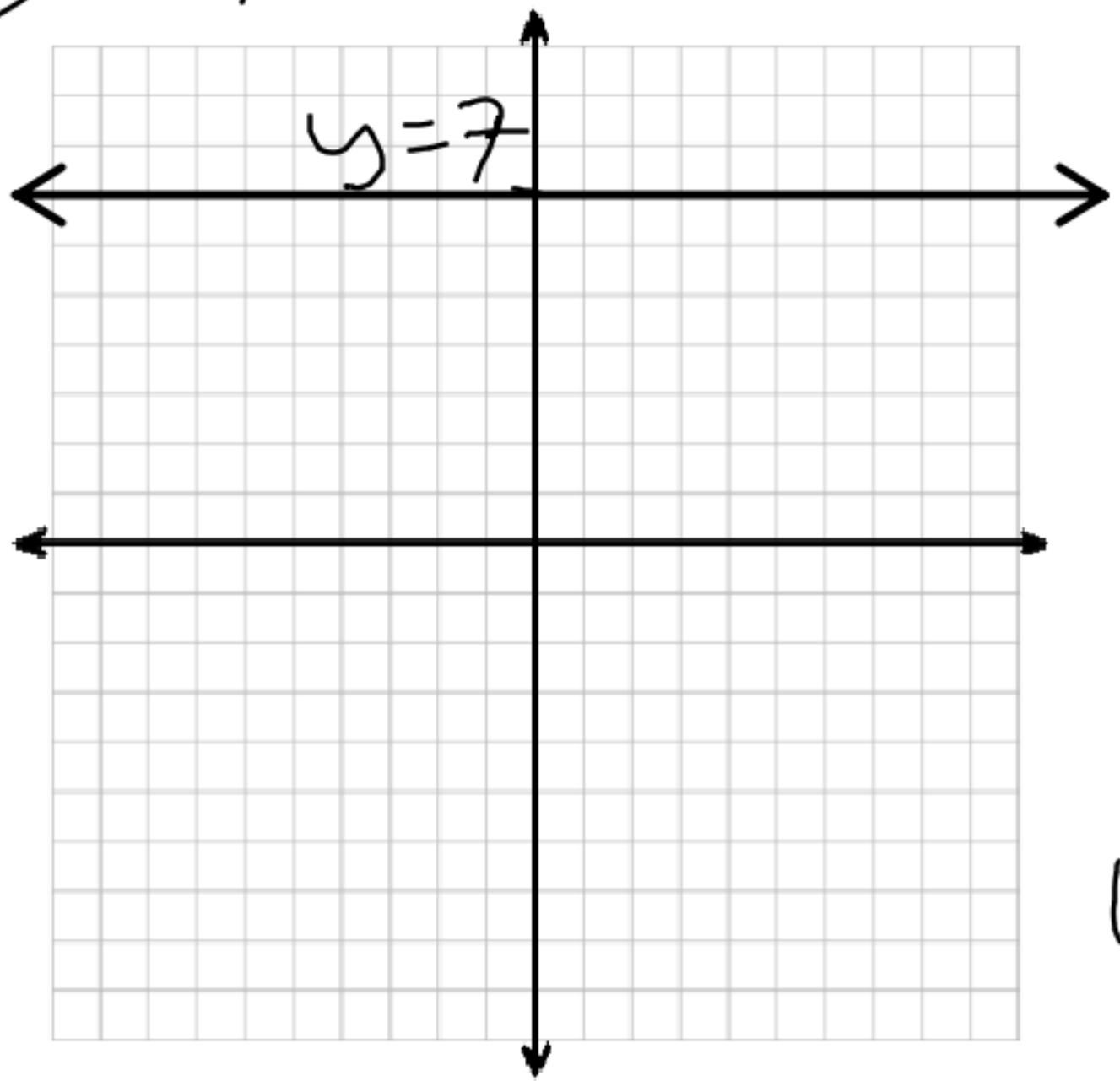
1

60

Slope intercept

domain range

(60) a)



a) slope = 0

→ domain is all real #s

→ range = 7

→ intercepts

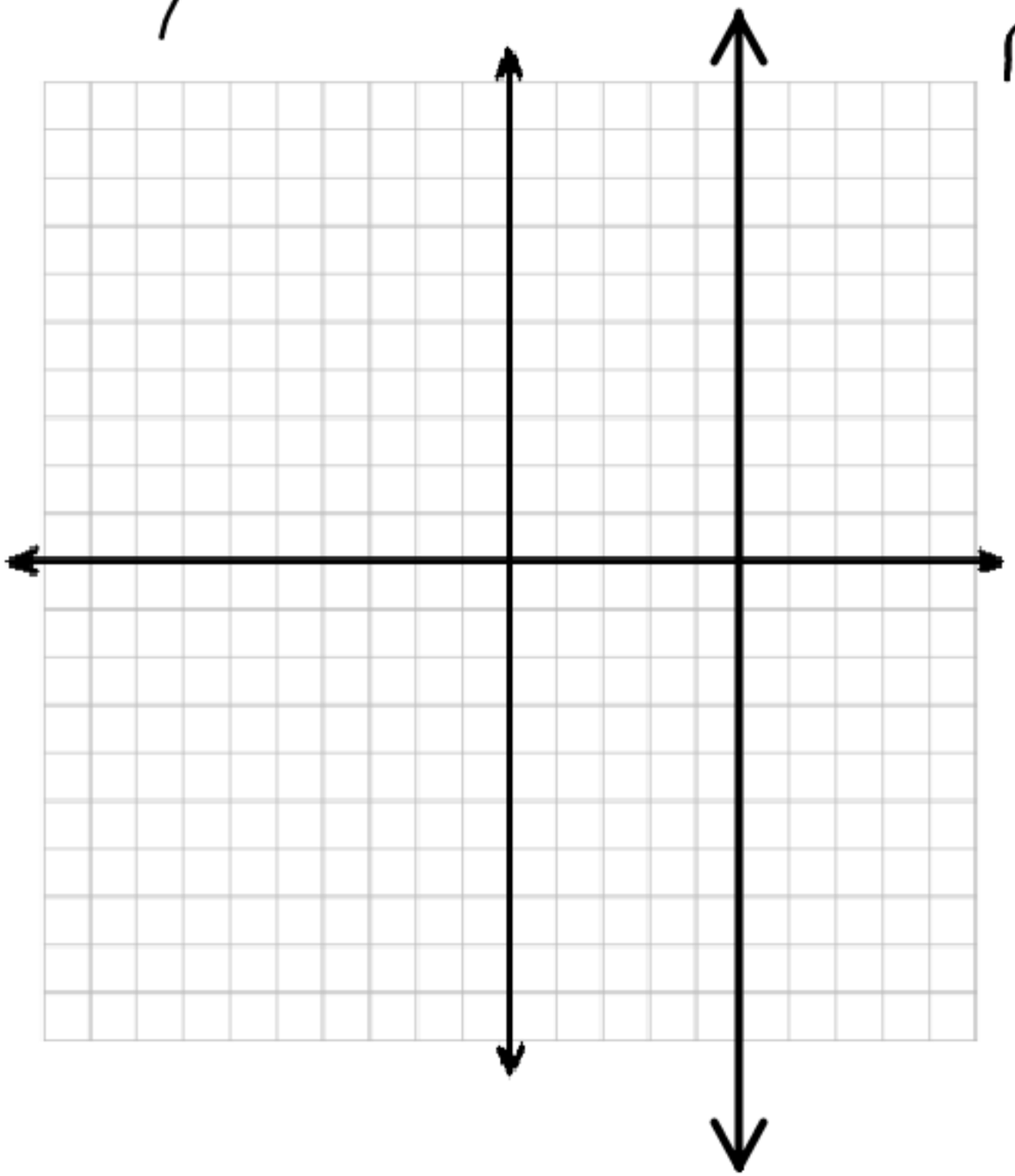
↳ x-intercepts

↳ NONE

↳ y-intercept

↳ (0, 7)

(6) d)



domain → S

range ⇒ any real #

intercepts

↳ x intercept

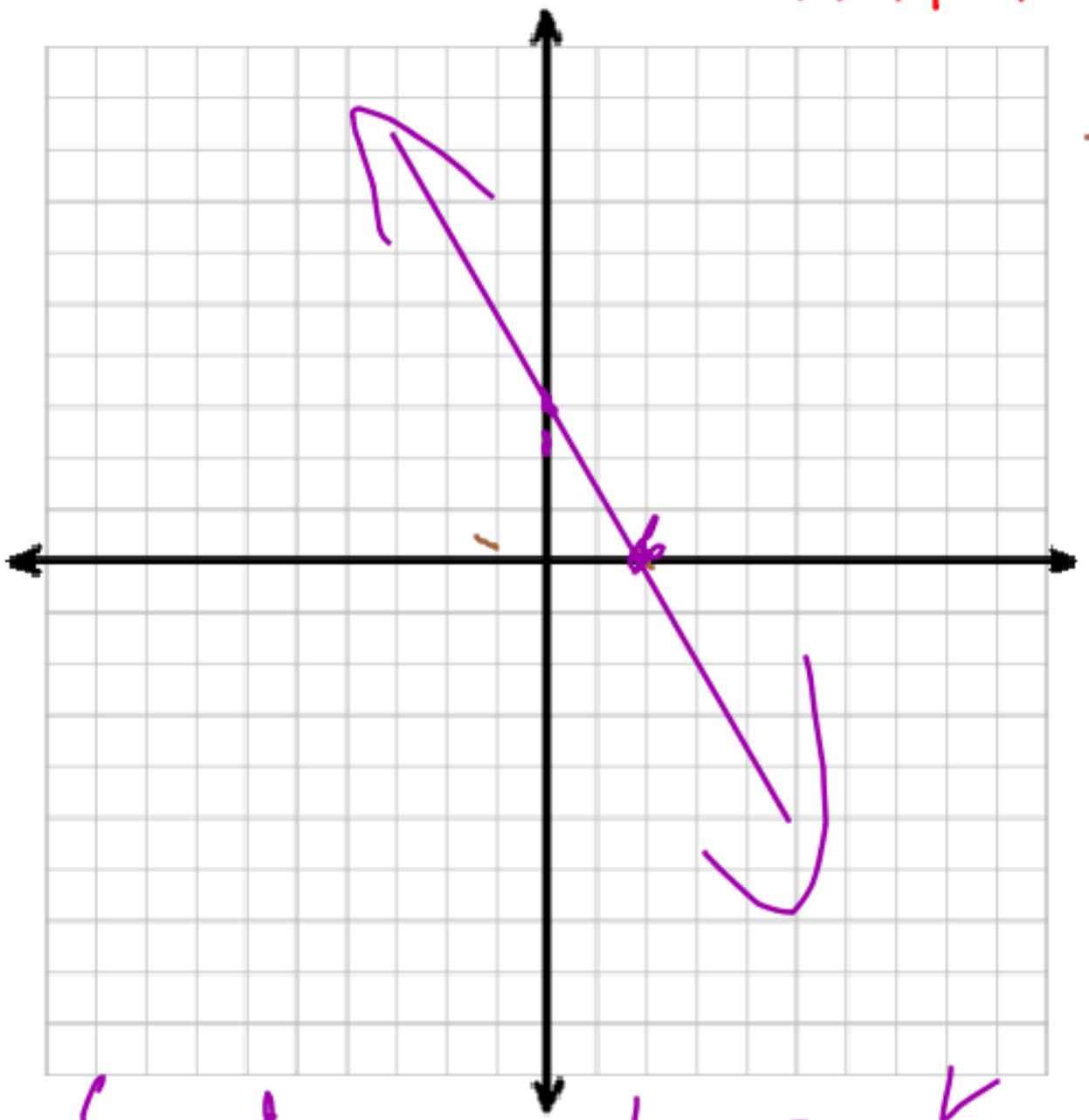
(5, 0)

↳ y intercept

↳ NONE

p 432) ① $3x+2y=6$

Find the intercepts



to find the x-intercept, $y=0$

$3x+2y=6$

$3x+2(0)=6$

$\frac{3x}{3}=\frac{6}{3}$

$x=2$

the x-intercept is (2, 0)

to find y-intercept, $x=0$

Homework

Finish box 4