

Ch 1

Distance Formula

$$(3, -1) \quad (2, 5)$$

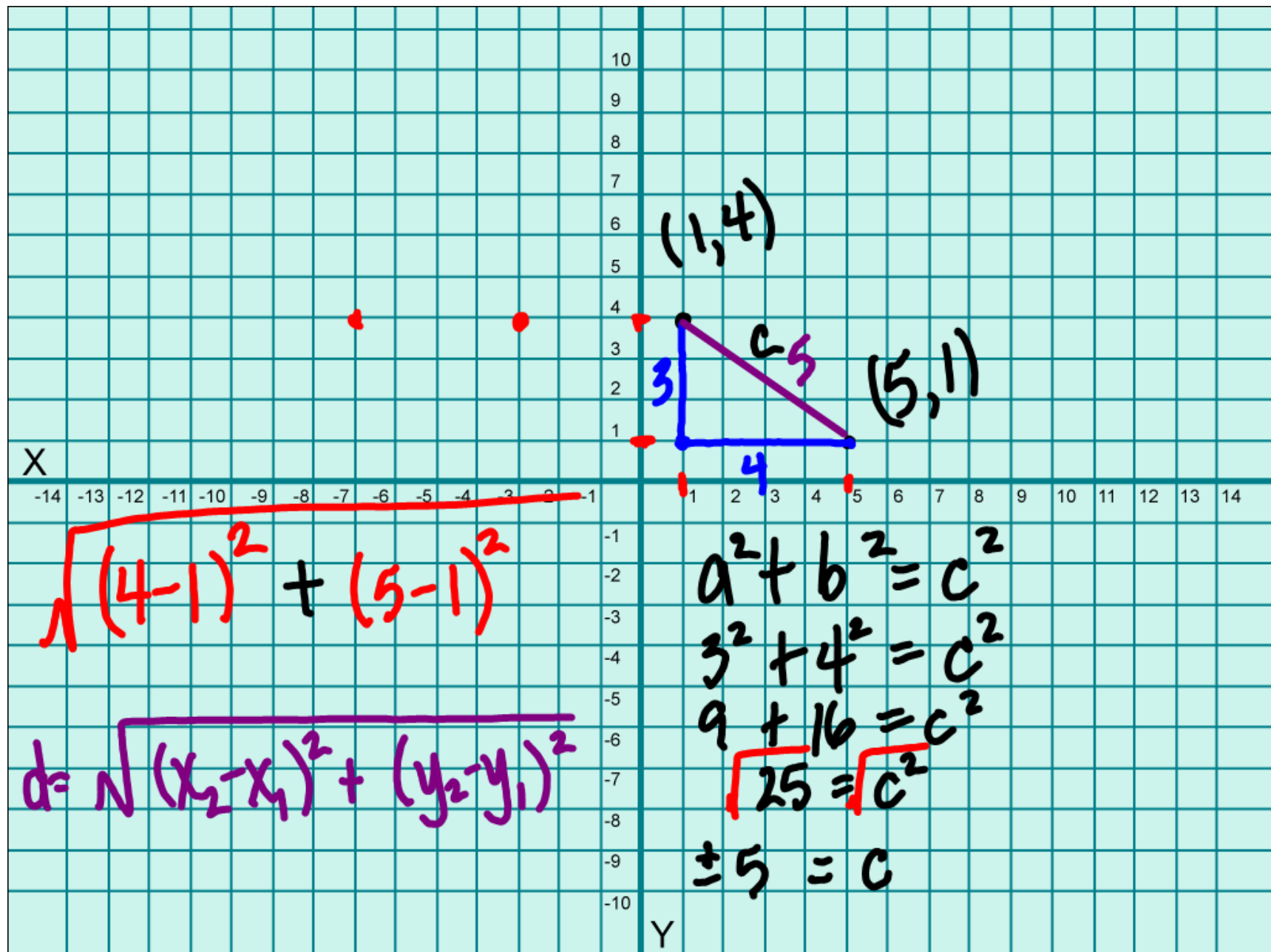
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(3 - 2)^2 + (-1 - 5)^2}$$

$$d = \sqrt{1^2 + (-6)^2}$$

$$d = \sqrt{1 + 36}$$

$$d = \sqrt{37}$$



Midpoint Formula

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Midpoint Formula

M



X

-14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1

10

9

8

7

6

5

4

3

2

1

(1, 2)

(5, 6)

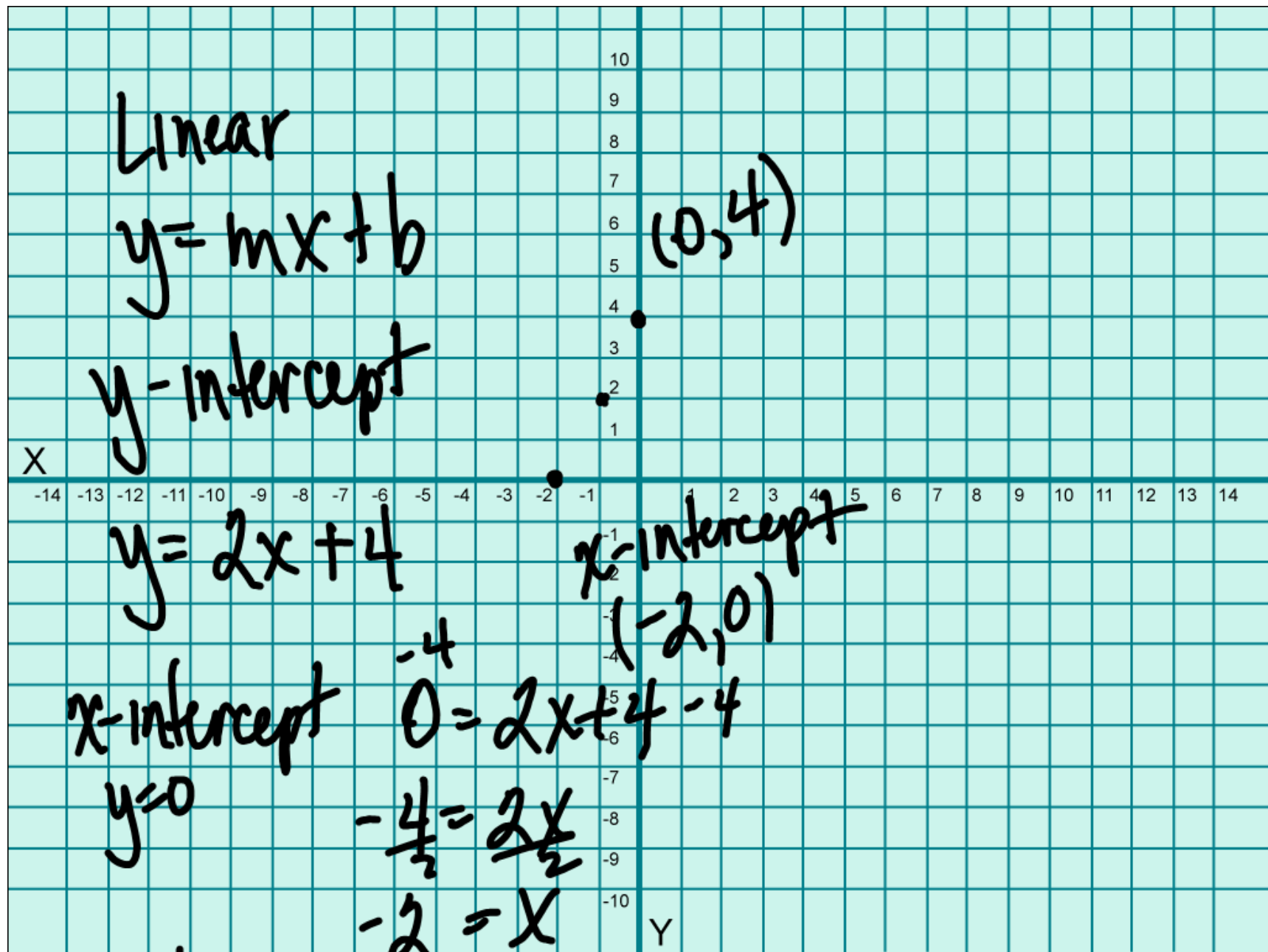
$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{1+5}{2}, \frac{2+6}{2} \right)$$

$$\left(\frac{6}{2}, \frac{8}{2} \right)$$

Y

$$(3, 4)$$



y-intercept

x=0

$$y = 2(0) + 4$$

$$y = 4$$

y-intercept $x=0$

x-intercept $y=0$

$$2x + 4y = 8$$

y-int
 $x=0$

$$2(0) + 4y = 8$$

$$4y = 8$$

$$y = 2$$

x-int
 $y=0$

$$2x + 4(0) = 8$$

$$2x = 8$$

$$x = 4$$

$$y = x^2 - 4$$

y-int
 $x=0$

$$y = 0^2 - 4$$

$$y = -4$$

X

x-int
 $y=0$

$$0 = x^2 - 4$$

$$\sqrt{4} = \sqrt{x^2}$$

$$\pm 2 = x$$

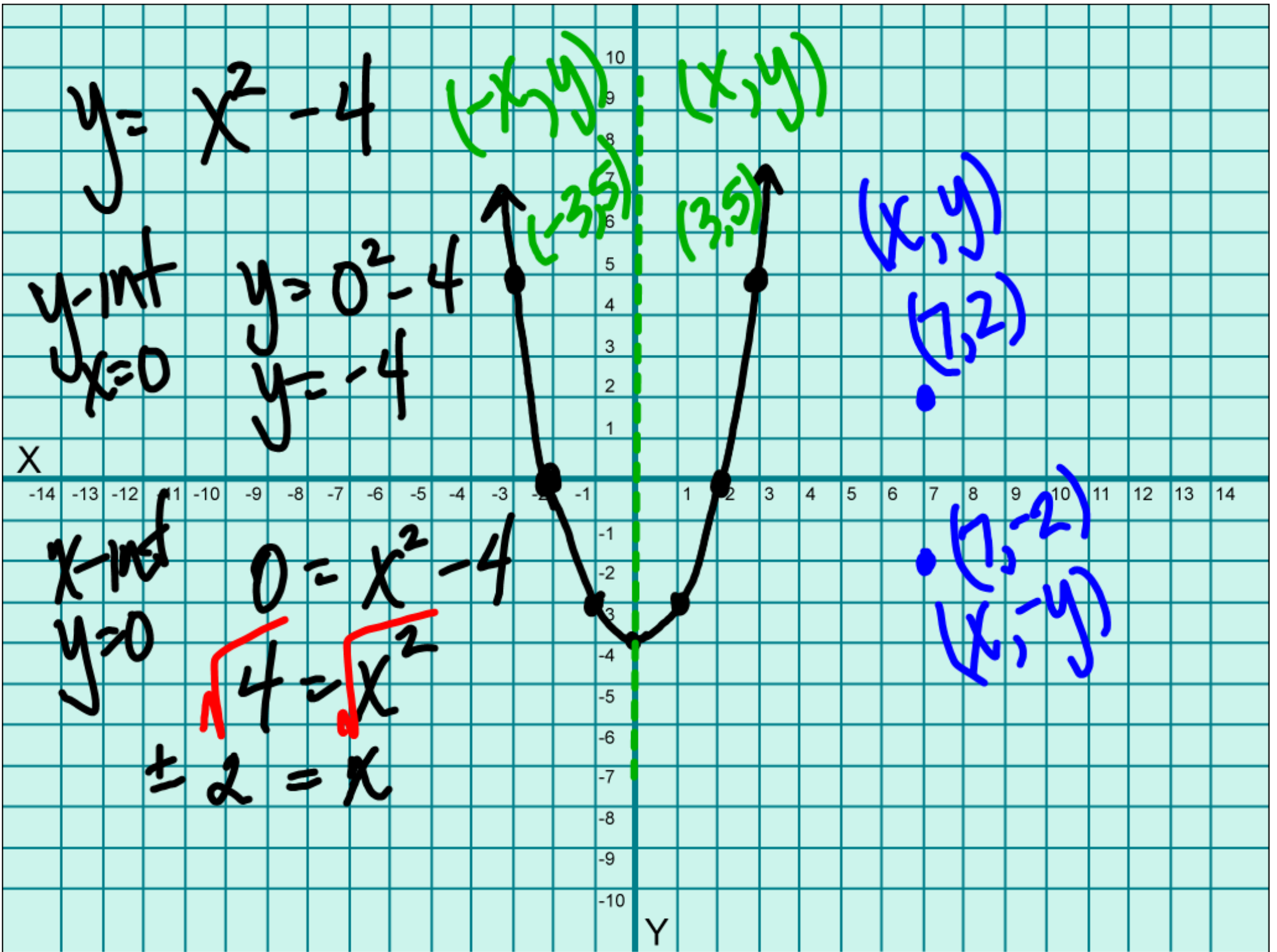
$(-x, y)$
 $(-3, 5)$
 (x, y)
 $(3, 5)$

(x, y)
 $(7, 2)$

(x, y)
 $(7, -2)$
 $(x, -y)$

10
9
8
7
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10

Y



Symmetry

with respect to x-axis

$$(x, y) \rightarrow (x, -y)$$

Replace y with $-y$

Same equation

$$x^2 + y^2 = 9$$

$$x^2 + (-y)^2 = 9$$

$$x^2 + y^2 = 9$$

Same

Symmetry
with respect to y-axis

$$(x, y) \rightarrow (-x, y)$$

Replace x with $-x$
Same equation

$$y = x^2 - 4$$

$$y = (-x)^2 - 4$$

$$y = x^2 - 4$$

Same

Symmetry with respect
to the origin

$$(x, y) \quad (-x, -y)$$

Replace x with $-x$
 y with $-y$

Same equation

$$(-x, y) \rightarrow (x, -y)$$