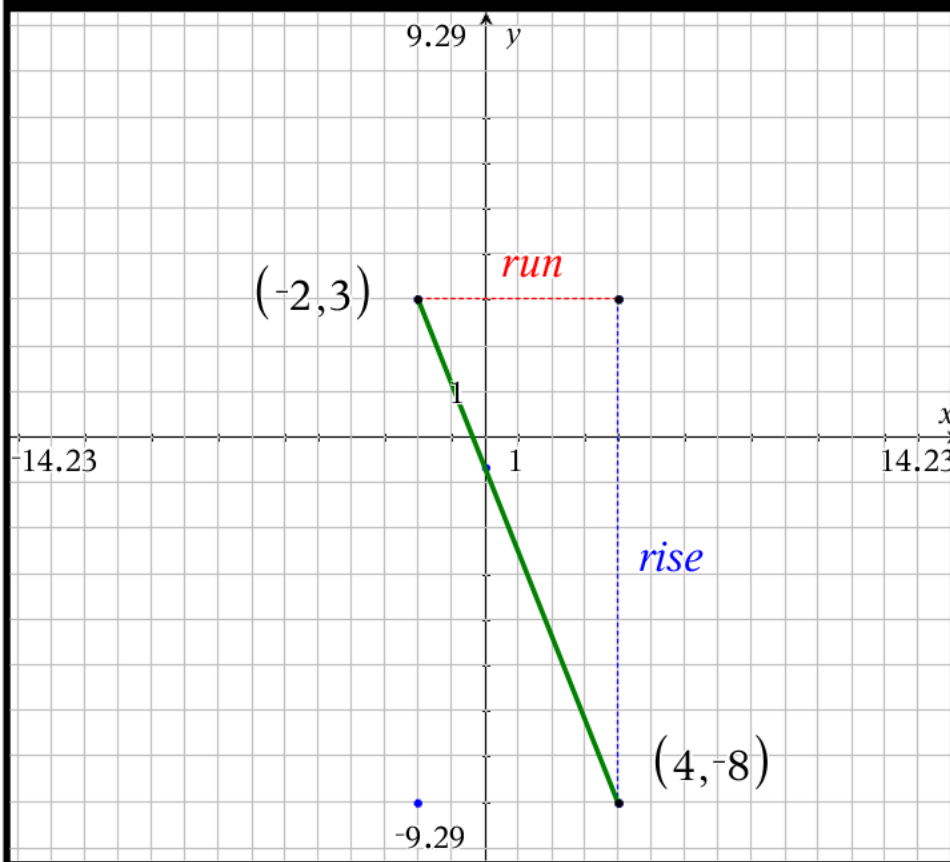


	A	B	C	D	E	F
=						
2	y_1		3			
3	x_2		4			
4	y_2		-8			
5						



Slope Intercept

Point 1 $(-2, 3)$

Point 2 $(4, -8)$

"rise" from Point 1 to point 2

$$y_2 - y_1 = -11$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 6$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -11/6 = \frac{-11}{6}$$

Slope Intercept Form of the Line between the two given points

$$y = \frac{-11 \cdot x}{6} - \frac{2}{3}$$

How to Find Slope between two given points

Point 1 (-2, 3) Point 2 (4, -8)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -11$$

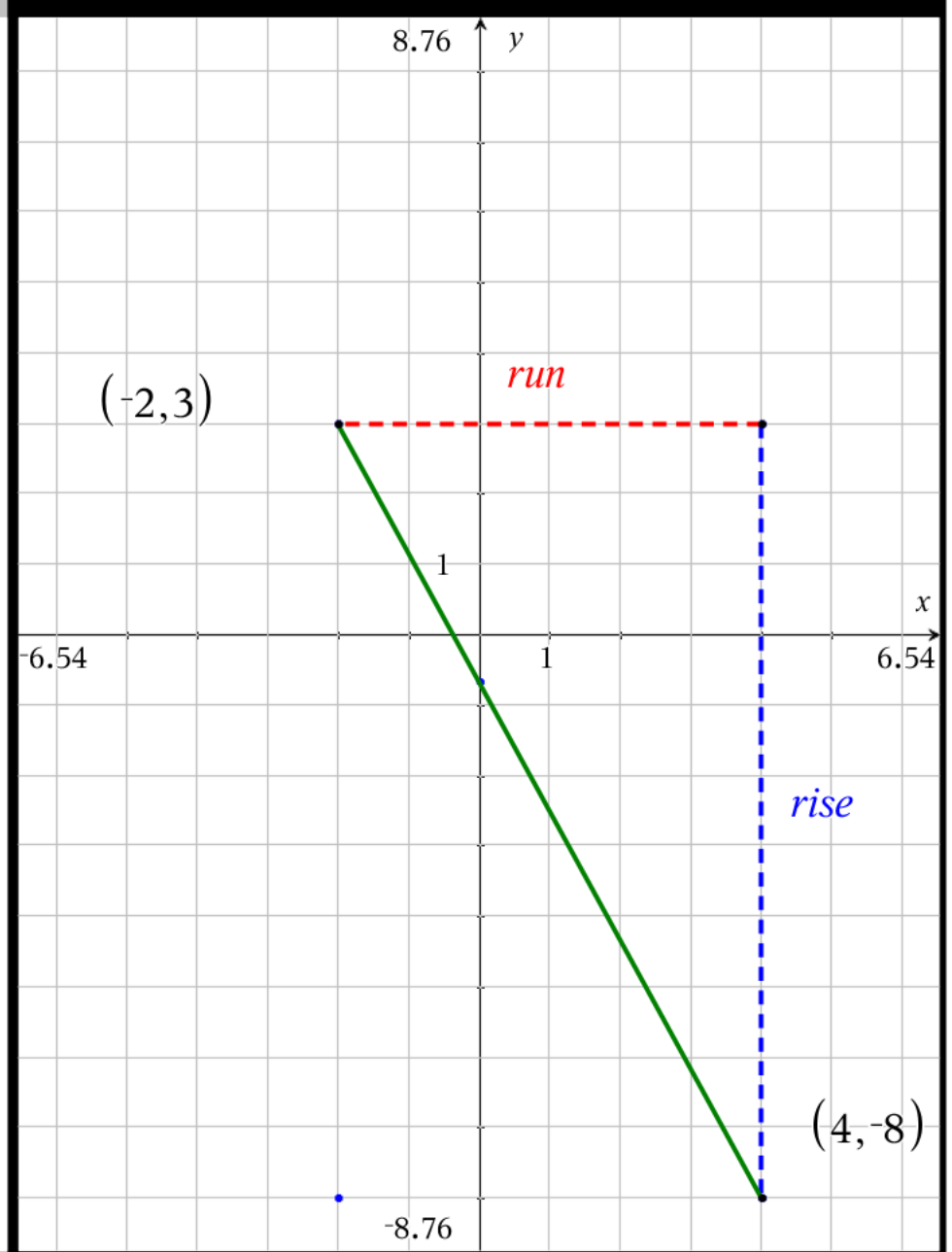
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 6$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -11 / 6 = \frac{-11}{6}$$



How to Find Distance between two given points

Point 1 (-2, 3) Point 2 (4, -8)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -11$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 6$$

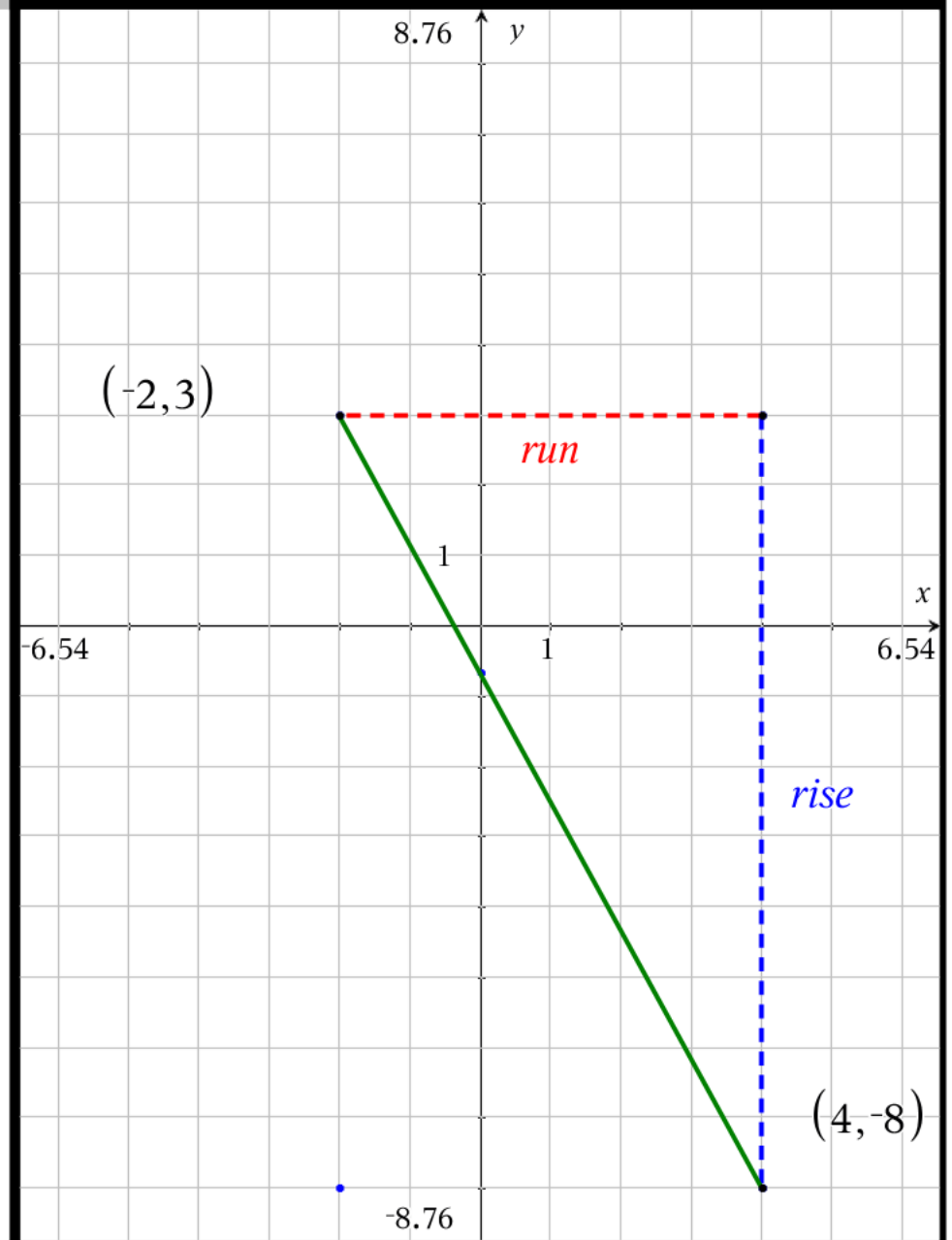
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(-11)^2 + (6)^2} = \sqrt{157}$$

$$D = \sqrt{157} \quad (\text{exact, but maybe NOT simplified})$$

$$= \sqrt{157} \quad (\text{Exact and simplified})$$

$$\approx 12.53 \quad (\text{Two decimal place approx.})$$



How to Find Midpoint between two given points

Point 1 (-2, 3) Point 2 (4, -8)

find "sum" of x coordinates from two points

$$x_2 + x_1 = 4 + (-2) = 2$$

divide that sum by 2

$$m_x = 2 / 2 = \frac{x_2 + x_1}{2} = 1$$

find "sum" of y coordinates of two points

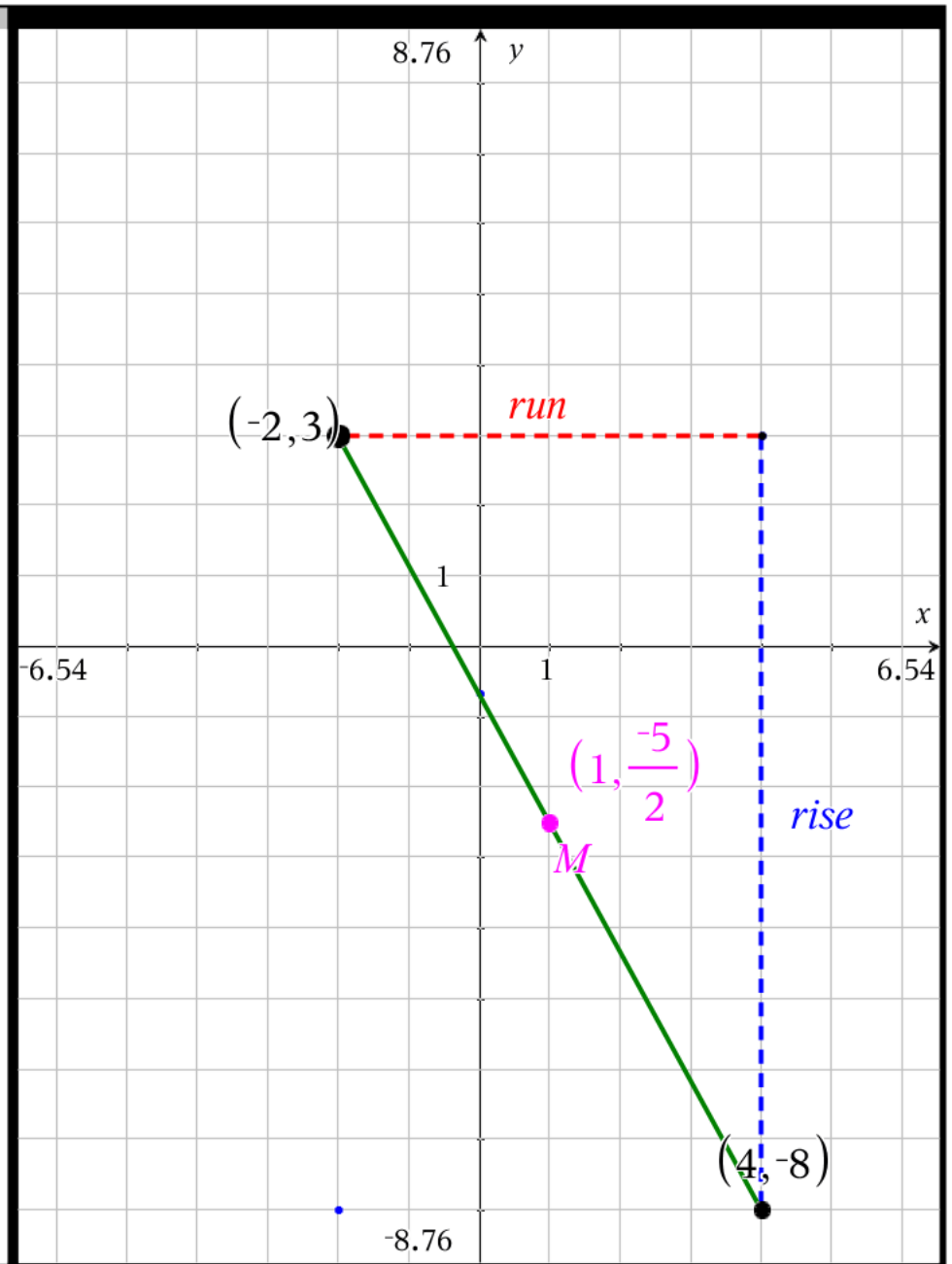
$$y_2 + y_1 = -8 + 3 = -5$$

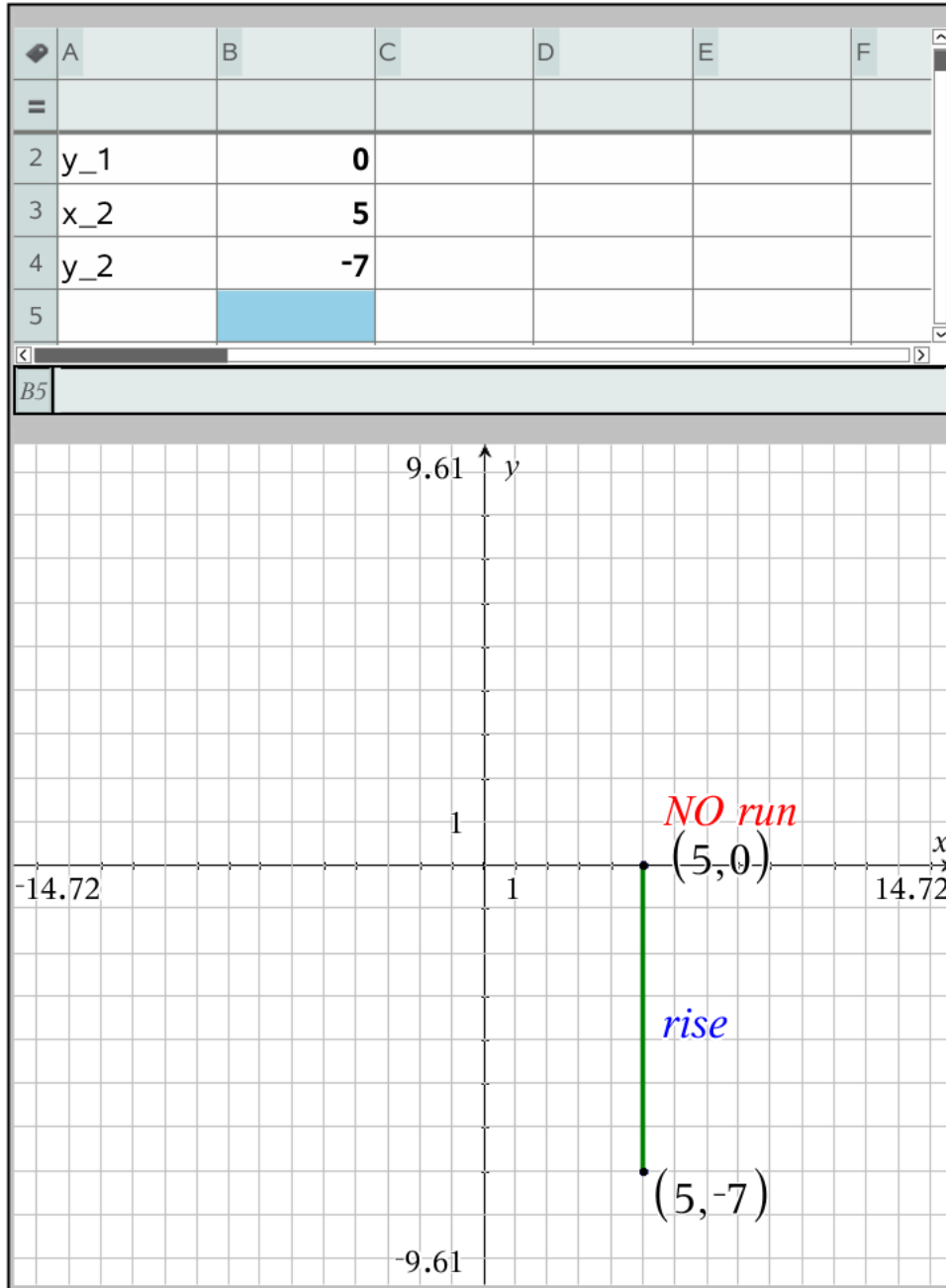
divide that sum by 2

$$m_y = -5 / 2 = \frac{y_2 + y_1}{2} = \frac{-5}{2}$$

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

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





Slope Intercept

Point 1 (5,0)

Point 2 (5,-7)

"rise" from Point 1 to point 2

$$y_2 - y_1 = -7$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -7 / 0 = \text{undef}$$

Slope Intercept Form of the Line between the two given points

m=undef

When SLOPE IS UNDEFINED

THEN This is a vertical line or X line !

$$x = 5$$

How to Find Slope between two given points

Point 1 (5,0) Point 2 (5,-7)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -7$$

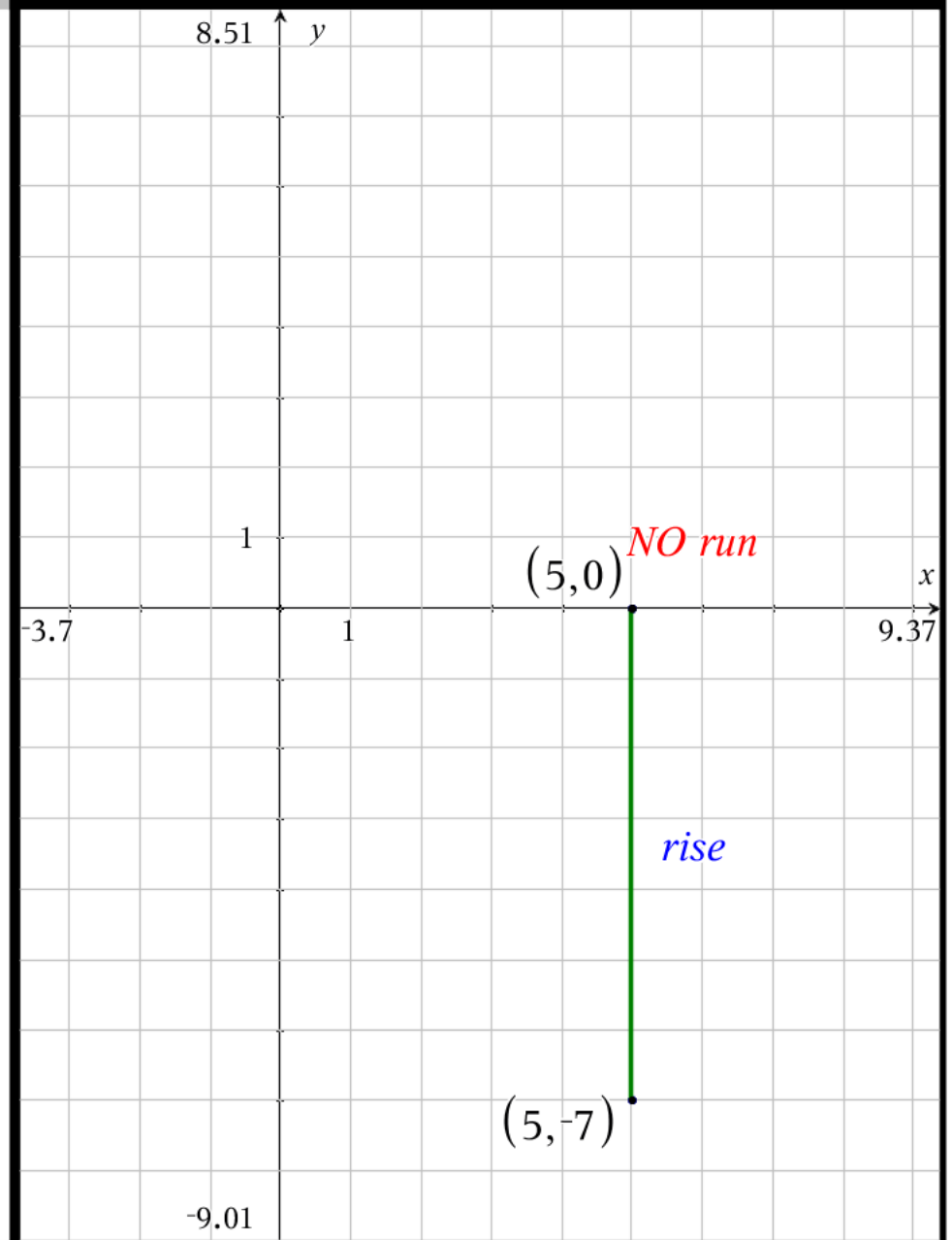
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -7/0 = \text{undef}$$



How to Find Distance between two given points

Point 1 (5,0) Point 2 (5,-7)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -7$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

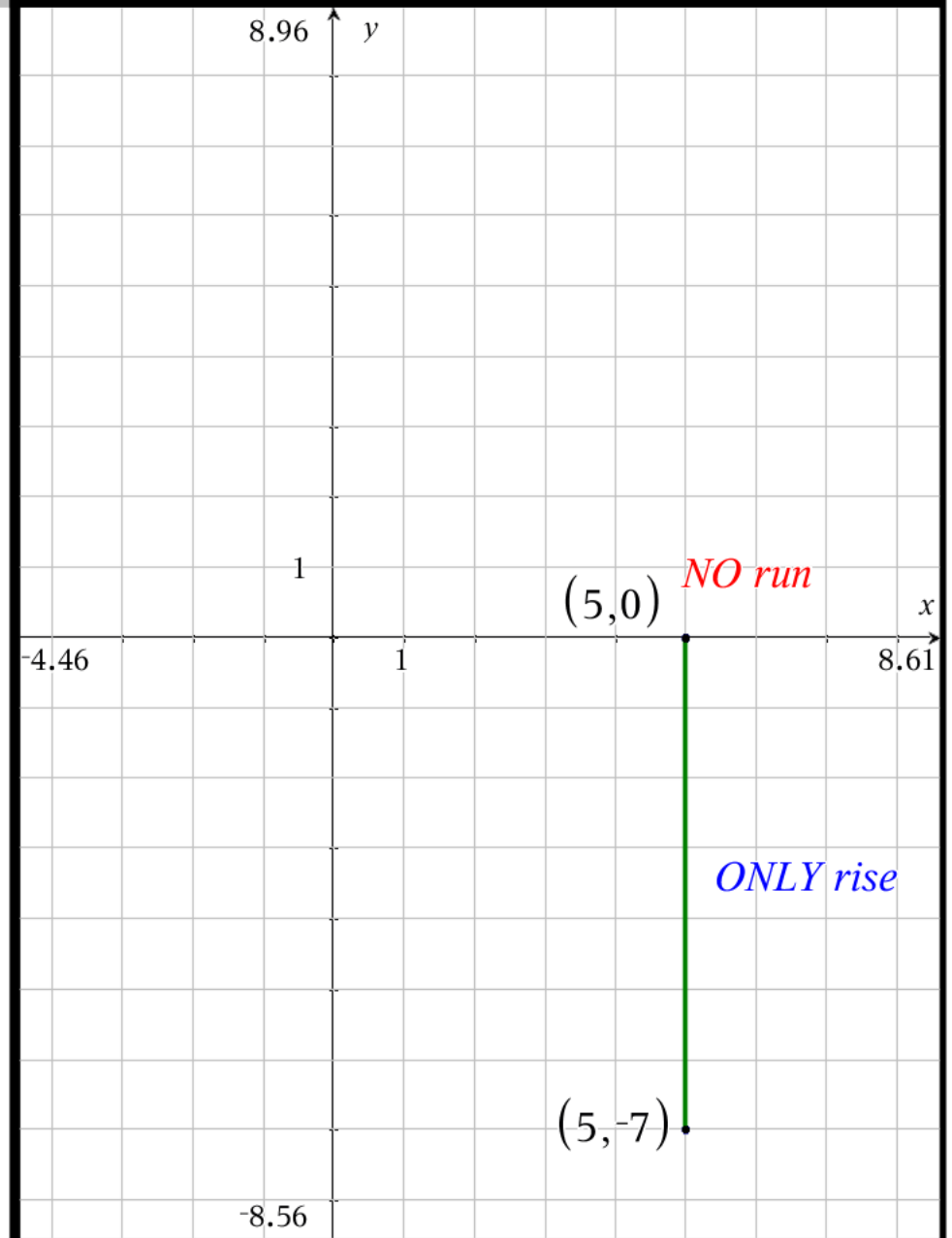
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(-7)^2 + (0)^2} = \sqrt{49}$$

$D = \sqrt{49}$ (exact, but maybe NOT simplified)

$= 7$ (Exact and simplified)

$\approx 7.$ (Two decimal place approx.)



How to Find Midpoint between two given points

Point 1 (5,0) Point 2 (5,-7)

find "sum" of x coordinates from two points

$$x_2 + x_1 = 5 + 5 = 10$$

divide that sum by 2

$$m_x = 10 / 2 = \frac{x_2 + x_1}{2} = 5$$

find "sum" of y coordinates of two points

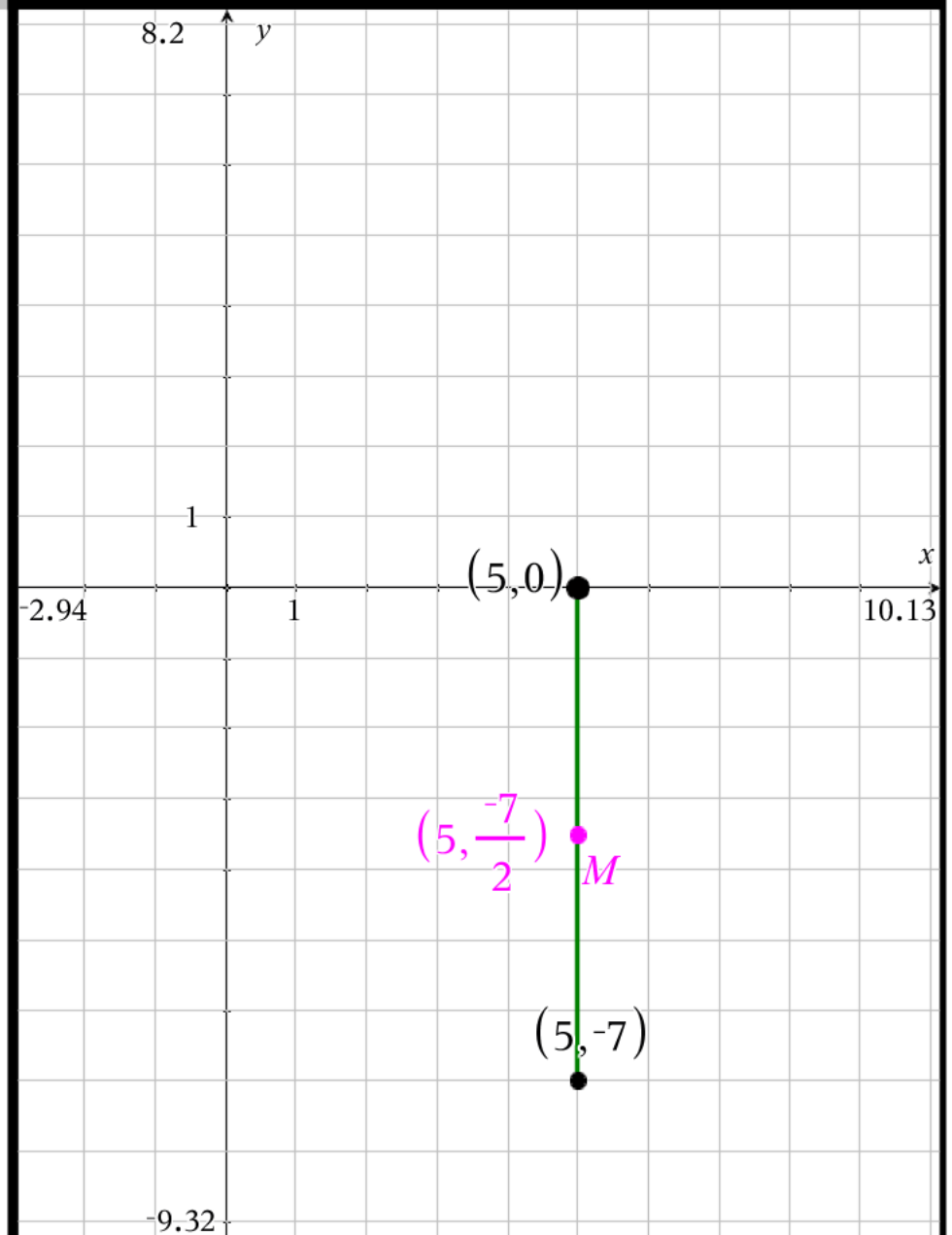
$$y_2 + y_1 = -7 + 0 = -7$$

divide that sum by 2

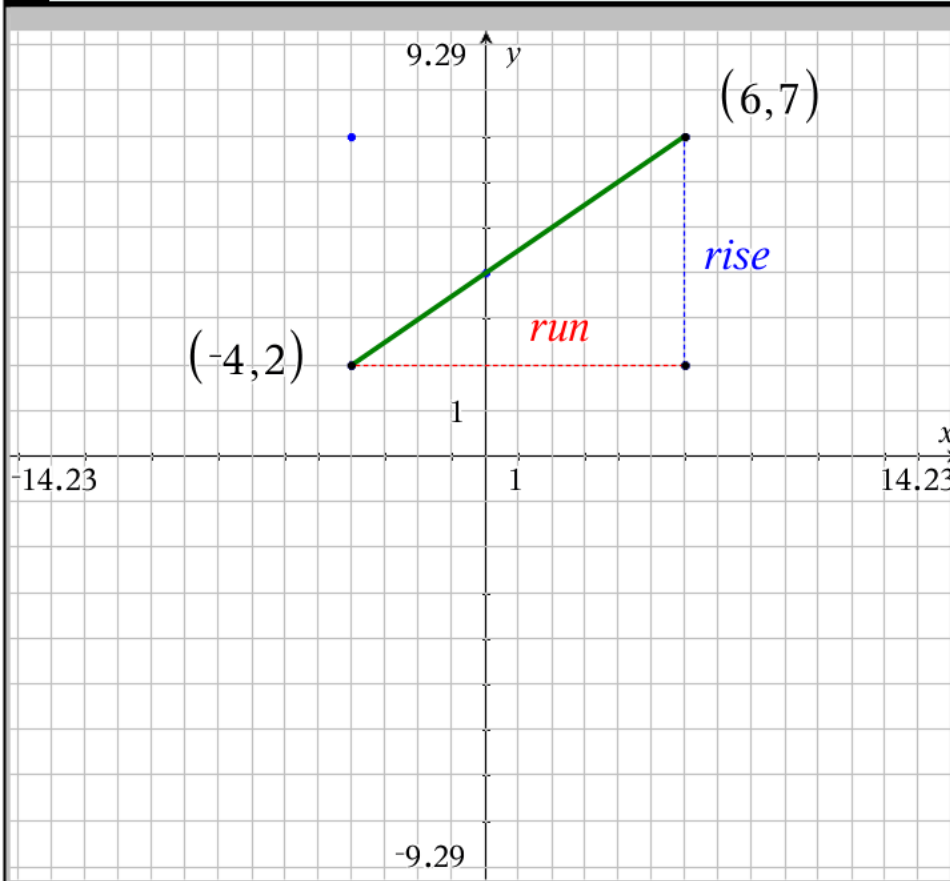
$$m_y = -7 / 2 = \frac{y_2 + y_1}{2} = \frac{-7}{2}$$

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

$$\left(5, \frac{-7}{2} \right)$$



	A	B	C	D	E	F
=						
2	y_1		2			
3	x_2		6			
4	y_2		7			
5						



Slope Intercept

Point 1 (-4,2)

Point 2 (6,7)

"rise" from Point 1 to point 2

$$y_2 - y_1 = 5$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 10$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{5}{10} = \frac{1}{2}$$

Slope Intercept Form of the Line between the two given points

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

How to Find Slope between two given points

Point 1 (-4, 2) Point 2 (6, 7)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = 5$$

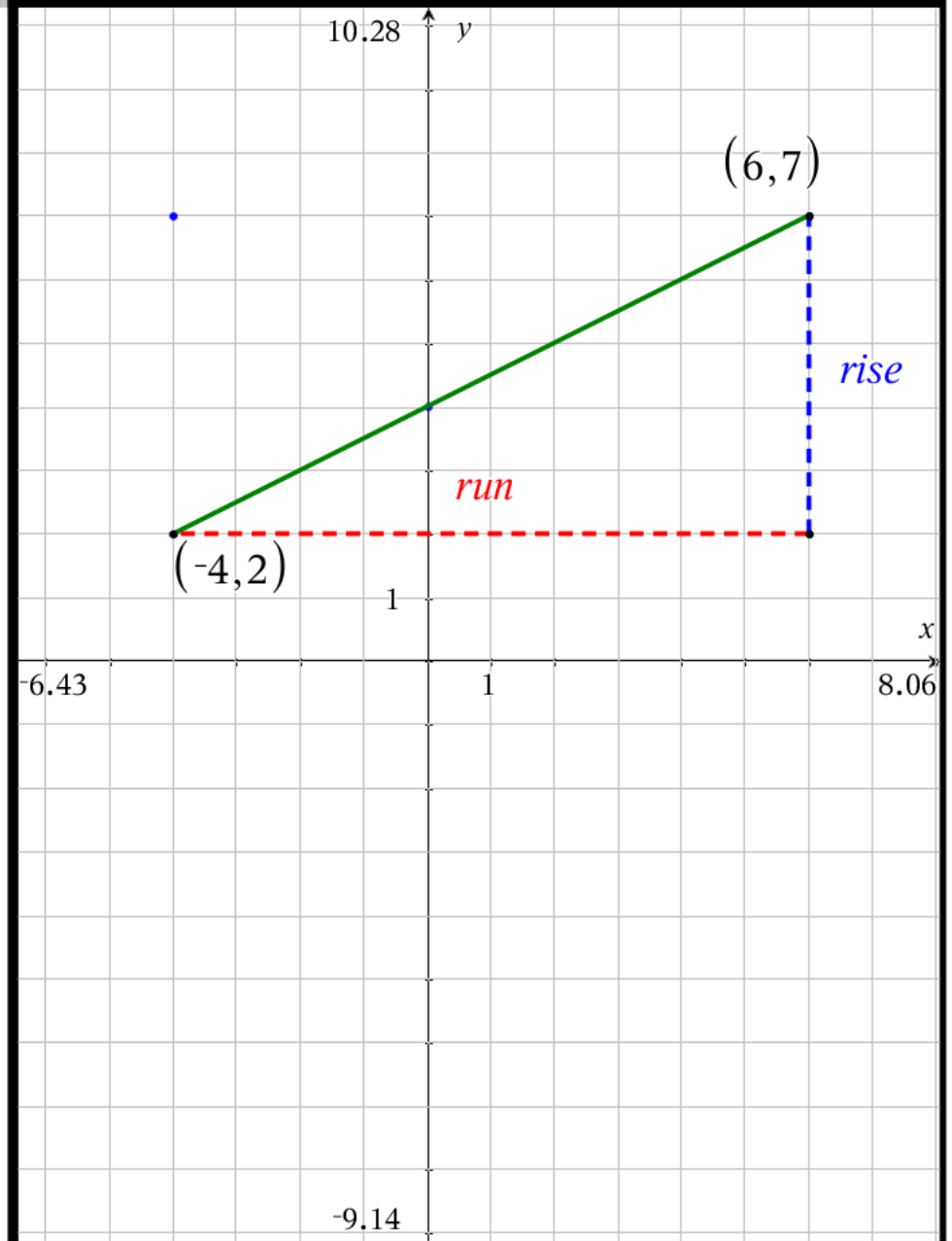
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 10$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{5}{10} = \frac{1}{2}$$



How to Find Distance between two given points

Point 1 (-4, 2) Point 2 (6, 7)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = 5$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 10$$

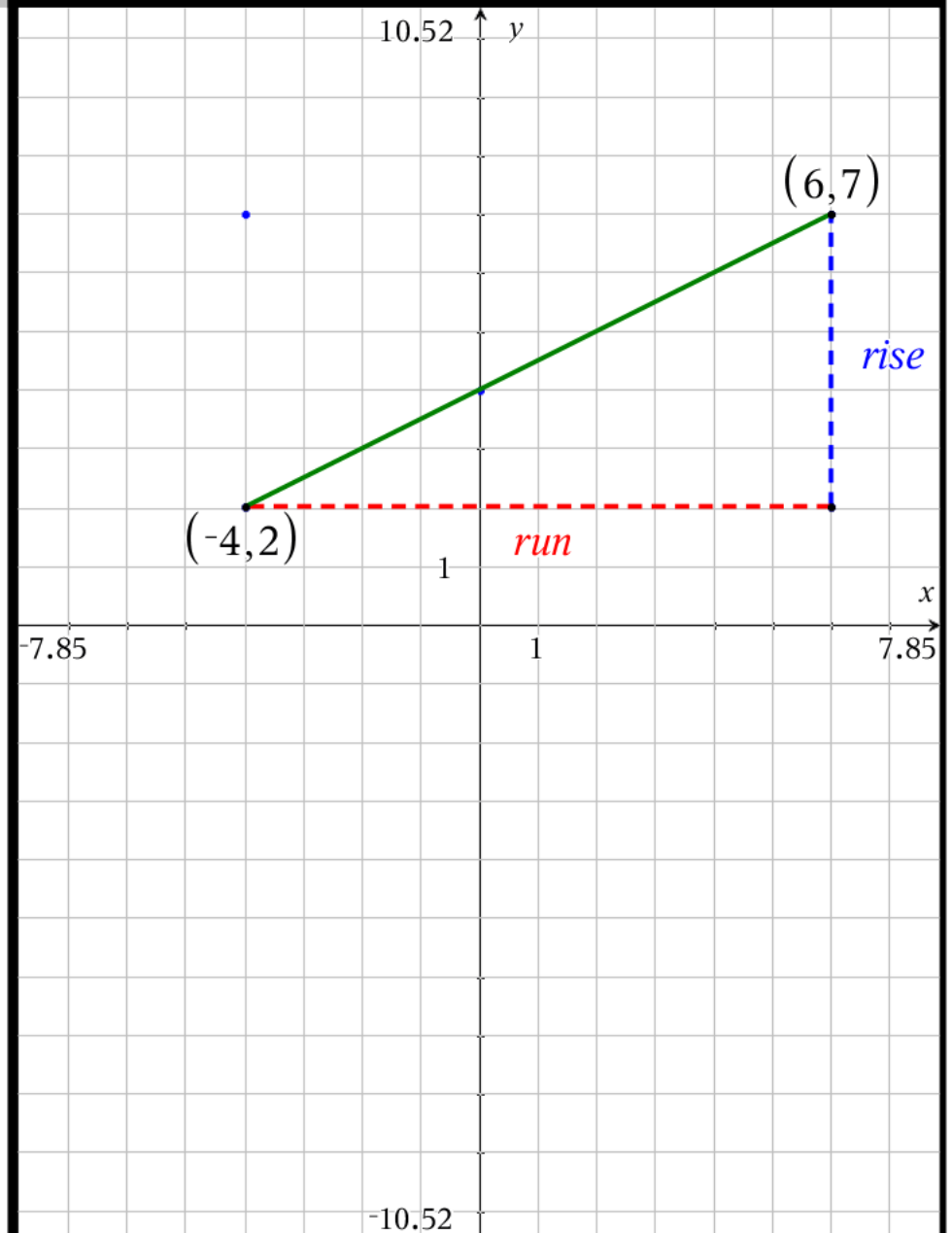
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(5)^2 + (10)^2} = \sqrt{125}$$

$$D = \sqrt{125} \quad (\text{exact, but maybe NOT simplified})$$

$$= 5 \cdot \sqrt{5} \quad (\text{Exact and simplified})$$

$$\approx 11.18 \quad (\text{Two decimal place approx.})$$



How to Find Midpoint between two given points

Point 1 (-4, 2) Point 2 (6, 7)

find "sum" of x coordinates from two points

$$x_2 + x_1 = 6 + (-4) = 2$$

divide that sum by 2

$$m_x = 2 / 2 = \frac{x_2 + x_1}{2} = 1$$

find "sum" of y coordinates of two points

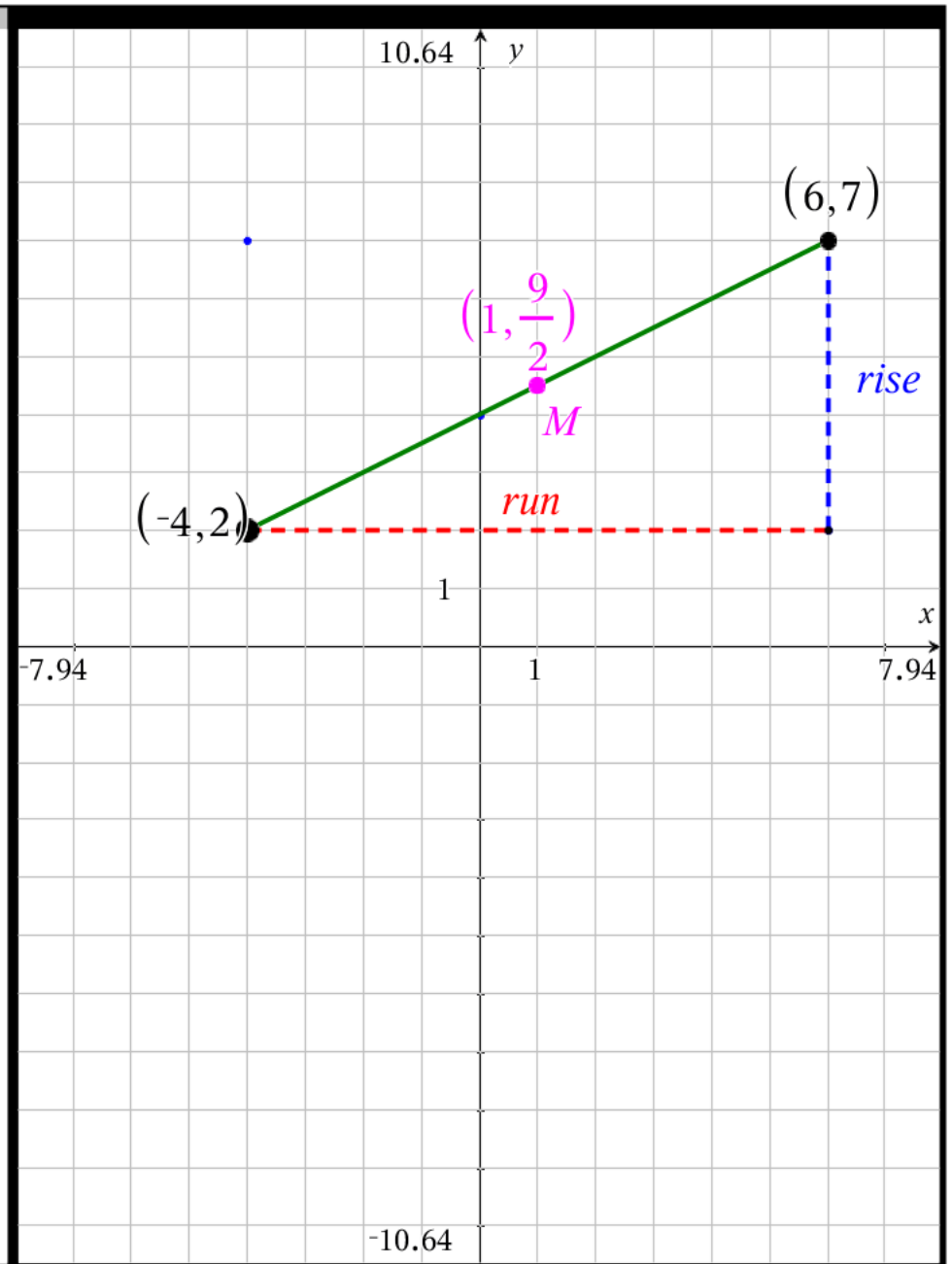
$$y_2 + y_1 = 7 + 2 = 9$$

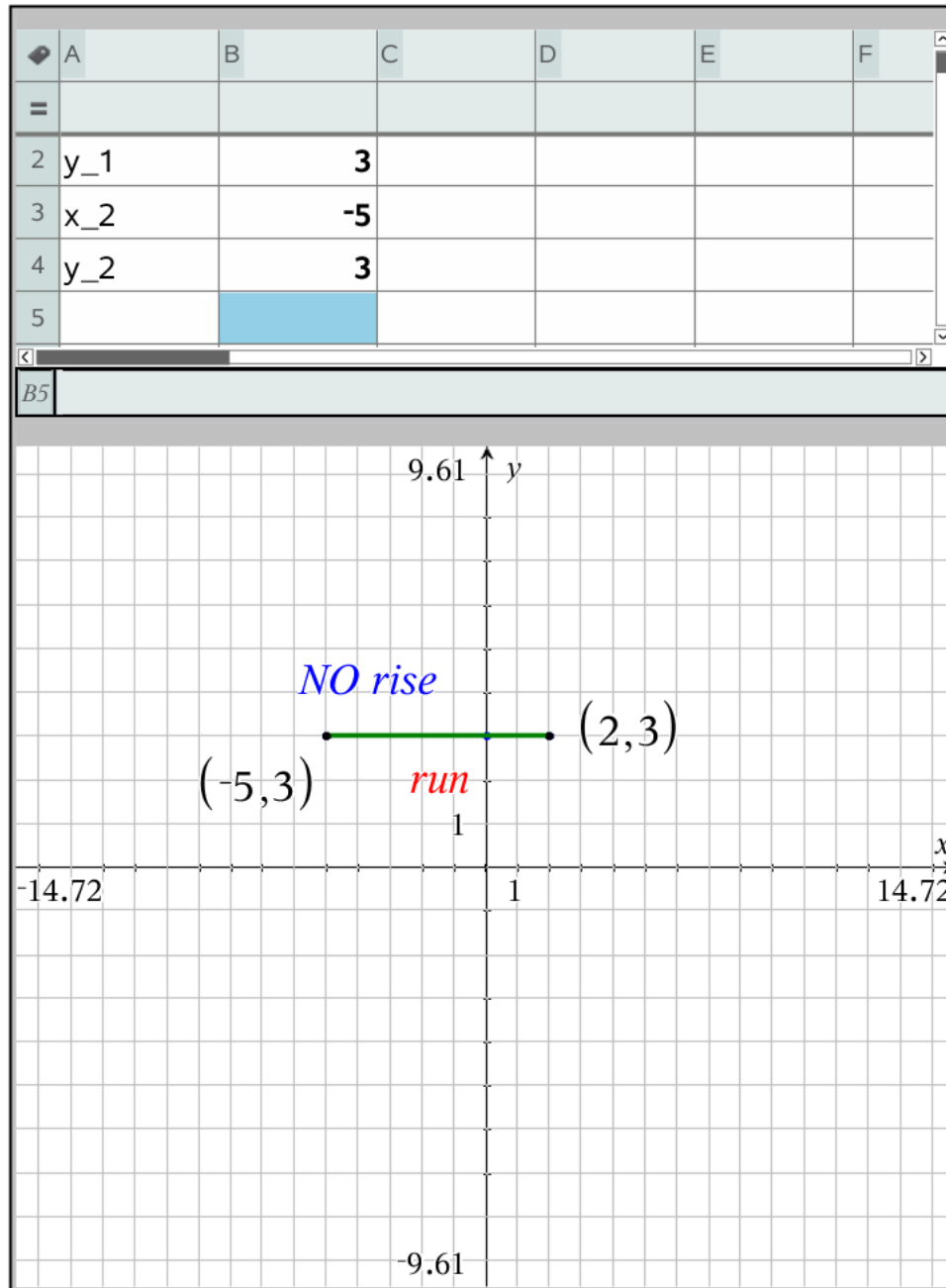
divide that sum by 2

$$m_y = 9 / 2 = \frac{y_2 + y_1}{2} = \frac{9}{2}$$

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

$$\left(1, \frac{9}{2} \right)$$





Slope Intercept

Point 1 (2,3)

Point 2 (-5,3)

"rise" from Point 1 to point 2

$$y_2 - y_1 = 0$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = -7$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = 0 / -7 = 0$$

Slope Intercept Form of the Line between the two given points

$$m=0$$

When SLOPE IS 0

THEN This is a horiozontal line or Y line !

$$y = 3$$

How to Find Slope between two given points

Point 1 (2,3) Point 2 (-5,3)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = 0$$

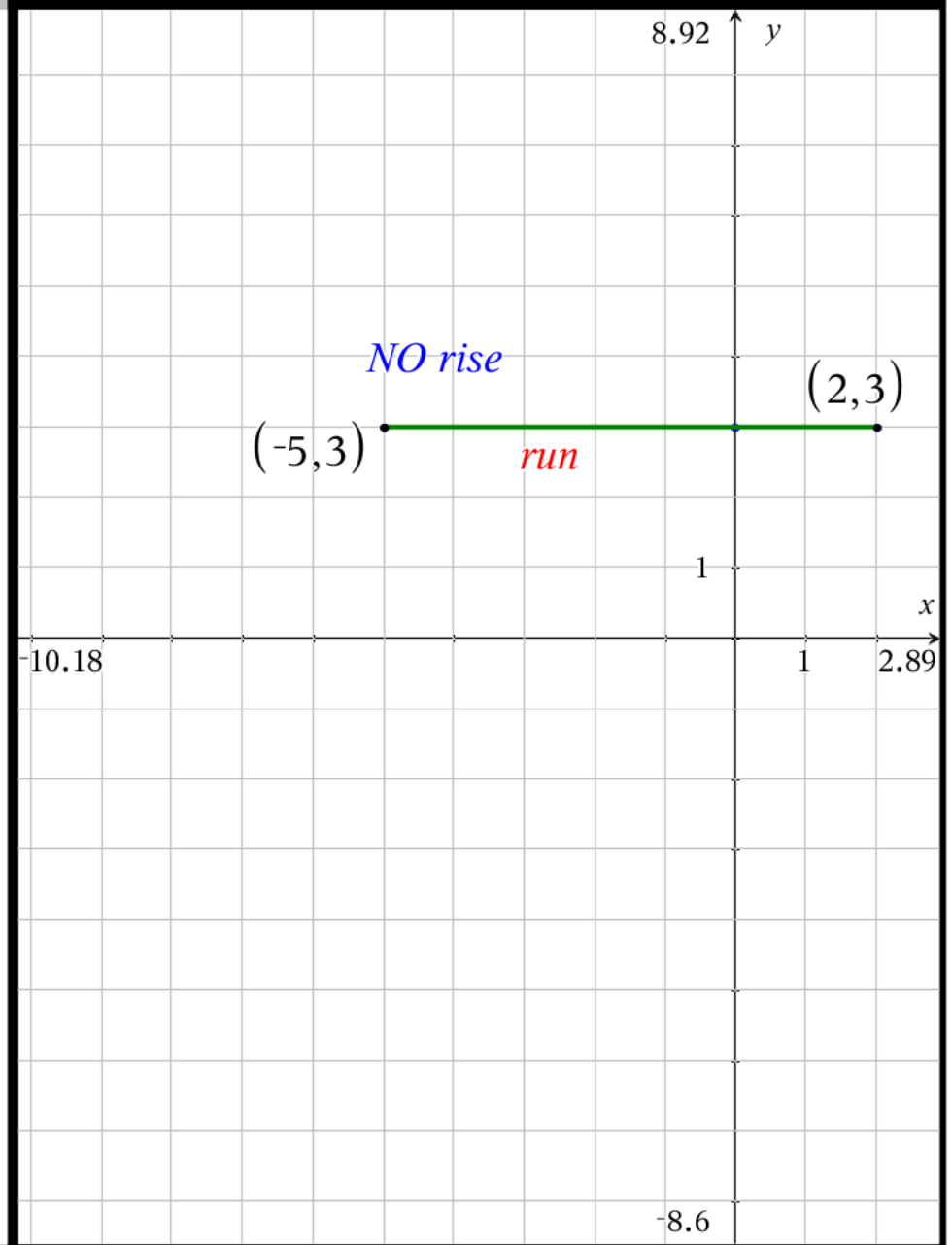
find "run" from Point 1 to Point 2

$$x_2 - x_1 = -7$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = 0 / -7 = 0$$



How to Find Distance between two given points

Point 1 (2,3) Point 2 (-5,3)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = 0$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = -7$$

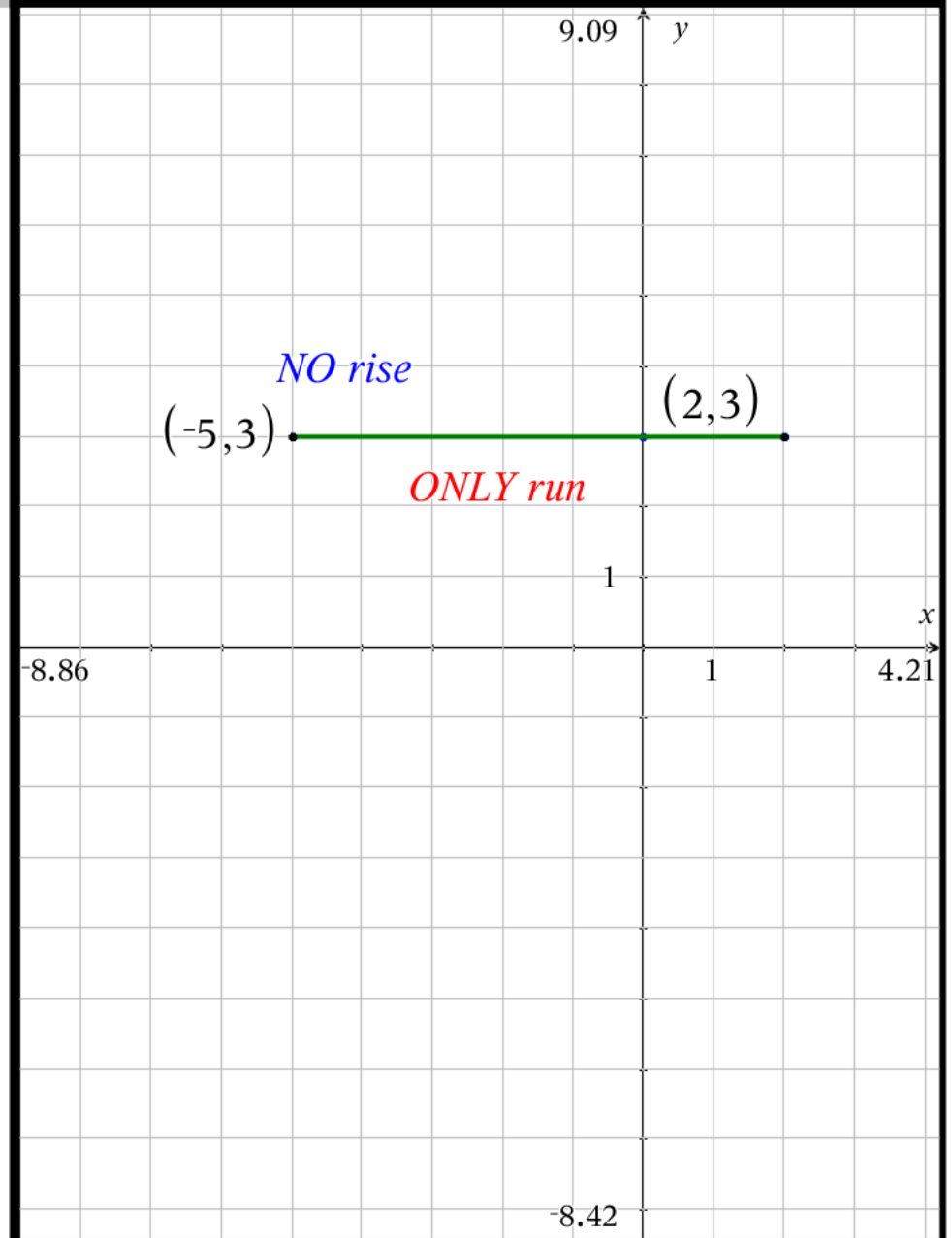
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(0)^2 + (-7)^2} = \sqrt{49}$$

$$D = \sqrt{49} \text{ (exact, but maybe NOT simplified)}$$

$$= 7 \text{ (Exact and simplified)}$$

$$\approx 7. \text{ (Two decimal place approx.)}$$



How to Find Midpoint between two given points

Point 1 (2,3) Point 2 (-5,3)

find "sum" of x coordinates from two points

$$x_2 + x_1 = -5 + 2 = -3$$

divide that sum by 2

$$m_x = -3 / 2 = \frac{x_2 + x_1}{2} = \frac{-3}{2}$$

find "sum" of y coordinates of two points

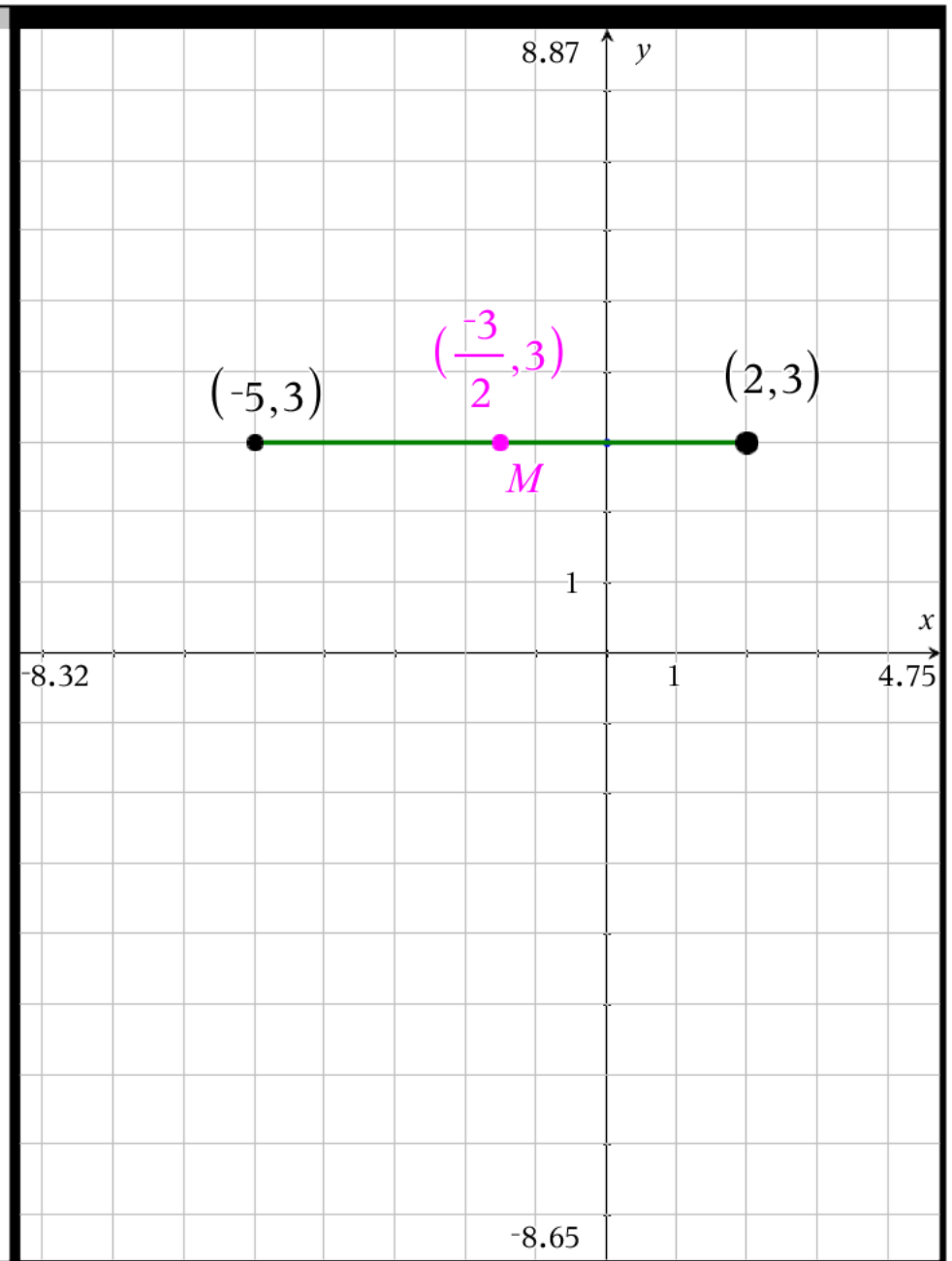
$$y_2 + y_1 = 3 + 3 = 6$$

divide that sum by 2

$$m_y = 6 / 2 = \frac{y_2 + y_1}{2} = 3$$

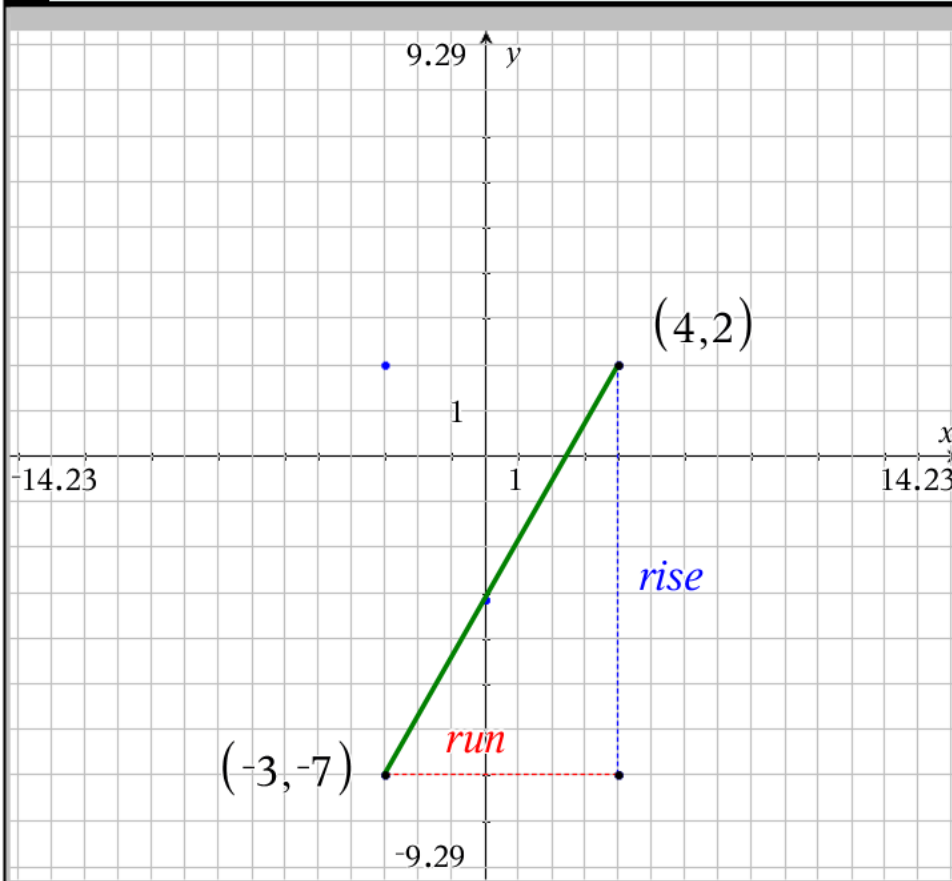
$$\text{Midpoint} \left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$$

$$\left(\frac{-3}{2}, 3 \right)$$



Problem 1

	A	B	C	D	E	F
=						
1	x_1		-3			
2	y_1		-7			
3	x_2		4			
4	y_2		2			
A1	x_1					



Slope Intercept

Point 1 (-3,-7)

Point 2 (4,2)

"rise" from Point 1 to point 2

$$y_2 - y_1 = 9$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 7$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = 9/7 = \frac{9}{7}$$

Slope Intercept Form of the Line between the two given points

$$y = \frac{9 \cdot x}{7} - \frac{22}{7}$$

How to Find Slope between two given points

Point 1 $(-3,-7)$ Point 2 $(4,2)$

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = 9$$

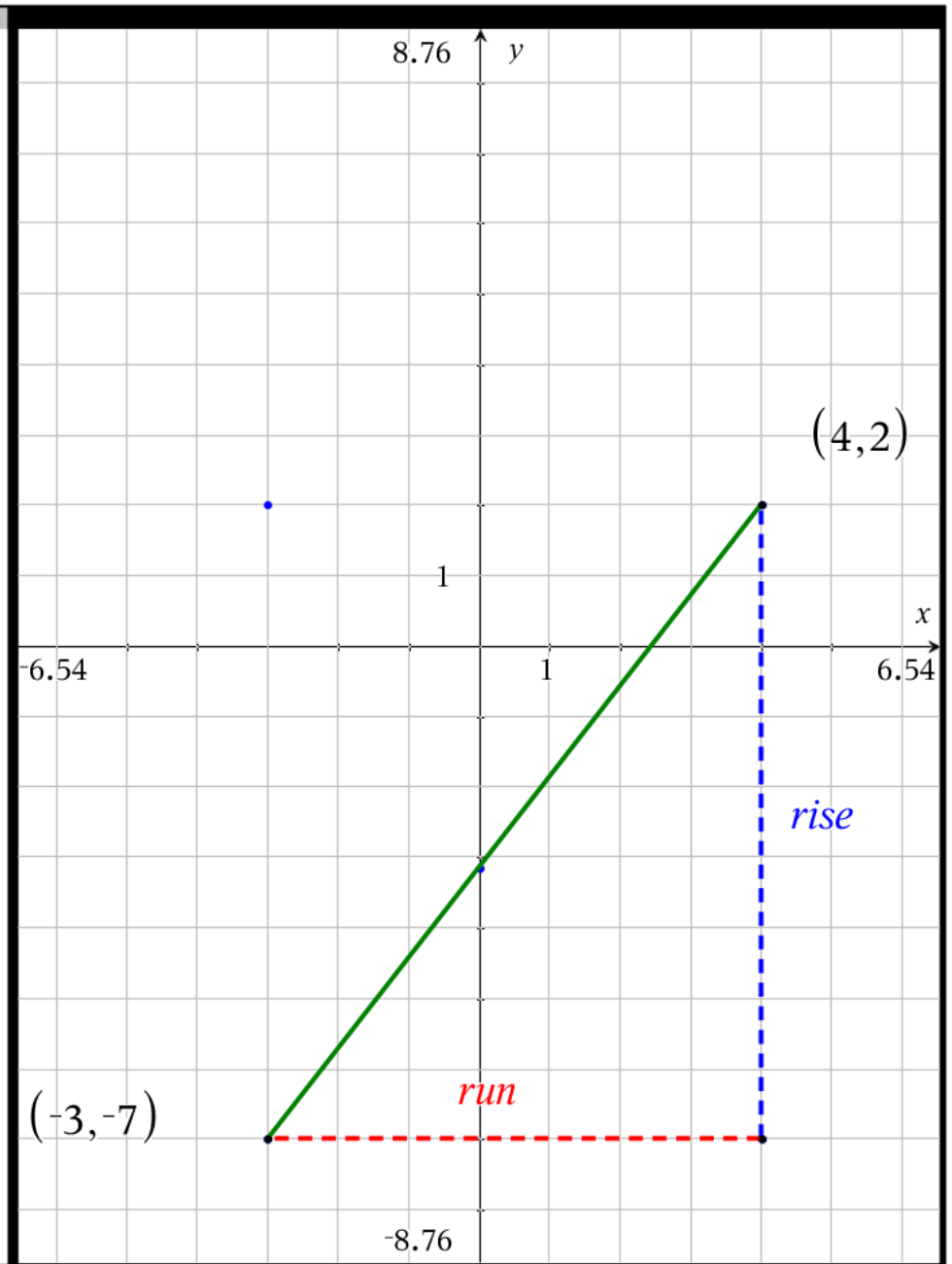
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 7$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = 9/7 = \frac{9}{7}$$



How to Find Distance between two given points

Point 1 $(-3, -7)$ Point 2 $(4, 2)$

find "rise" from Point 1 to point 2

$$y_2 - y_1 = 9$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 7$$

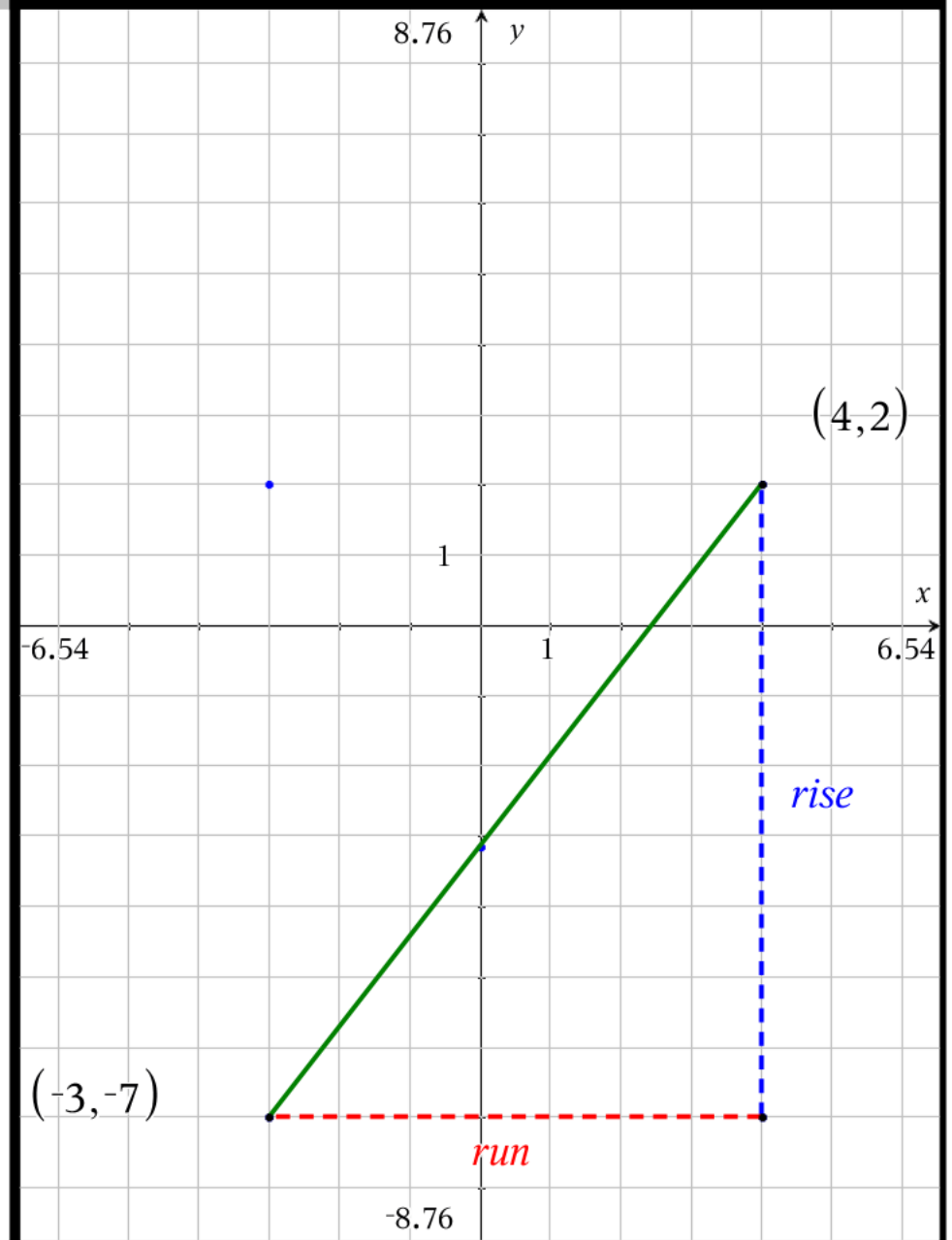
$$\text{Distance}^2 = \text{rise}^2 + \text{run}^2$$

$$= (9)^2 + (7)^2 = 130$$

$$D = \sqrt{130} \text{ (exact, but maybe NOT simplified)}$$

$$= \sqrt{130} \text{ (Exact and simplified)}$$

$$\approx 11.4 \text{ (Two decimal place approx.)}$$



How to Find Midpoint between two given points

Point 1 (-3,-7) Point 2 (4,2)

find "sum" of x coordinates from two points

$$x_2 + x_1 = 4 + (-3) = 1$$

divide that sum by 2

$$m_x = 1/2 = \frac{x_2 + x_1}{2} = \frac{1}{2}$$

find "sum" of y coordinates of two points

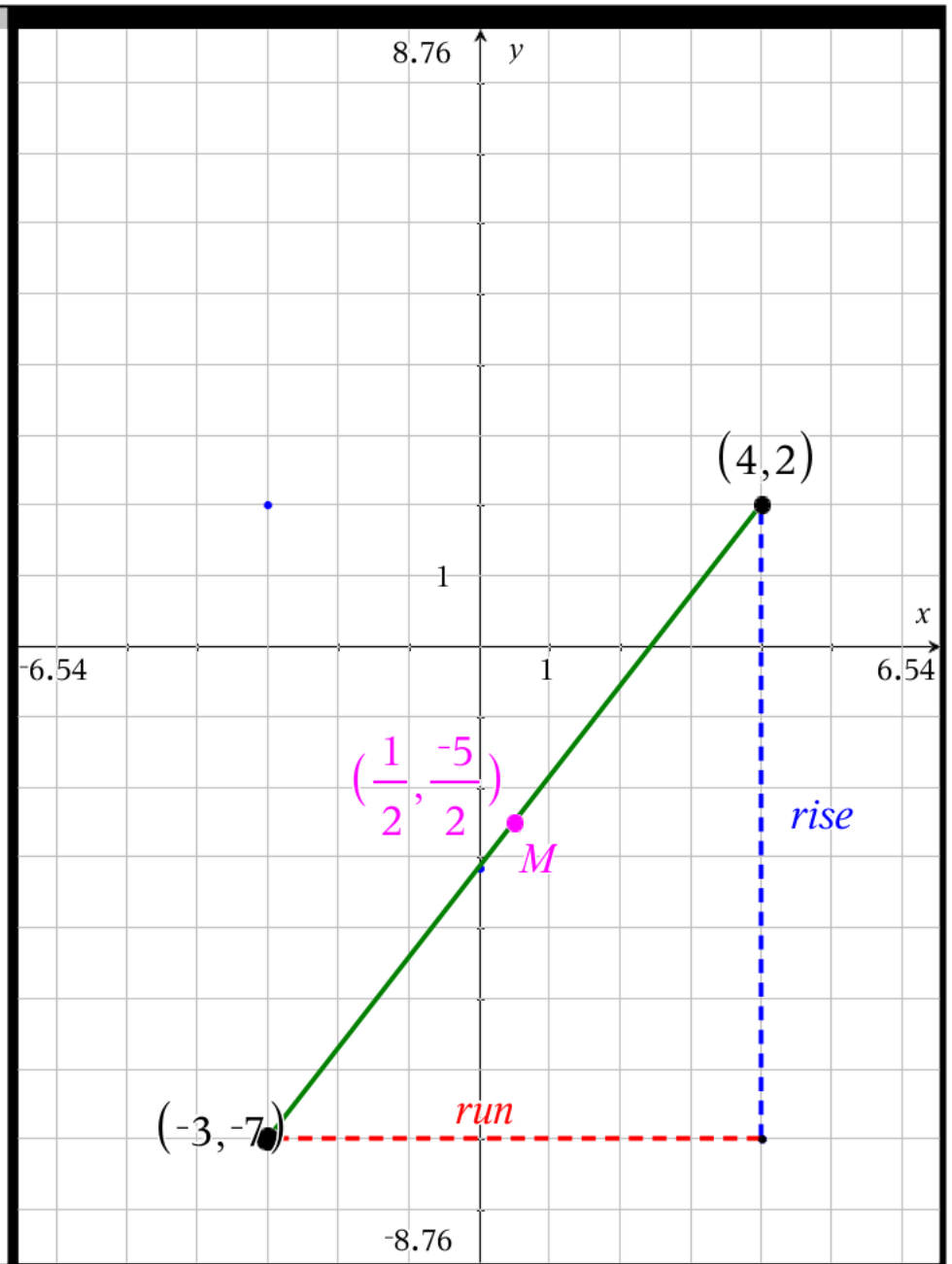
$$y_2 + y_1 = 2 + (-7) = -5$$

divide that sum by 2

$$m_y = -5/2 = \frac{y_2 + y_1}{2} = \frac{-5}{2}$$

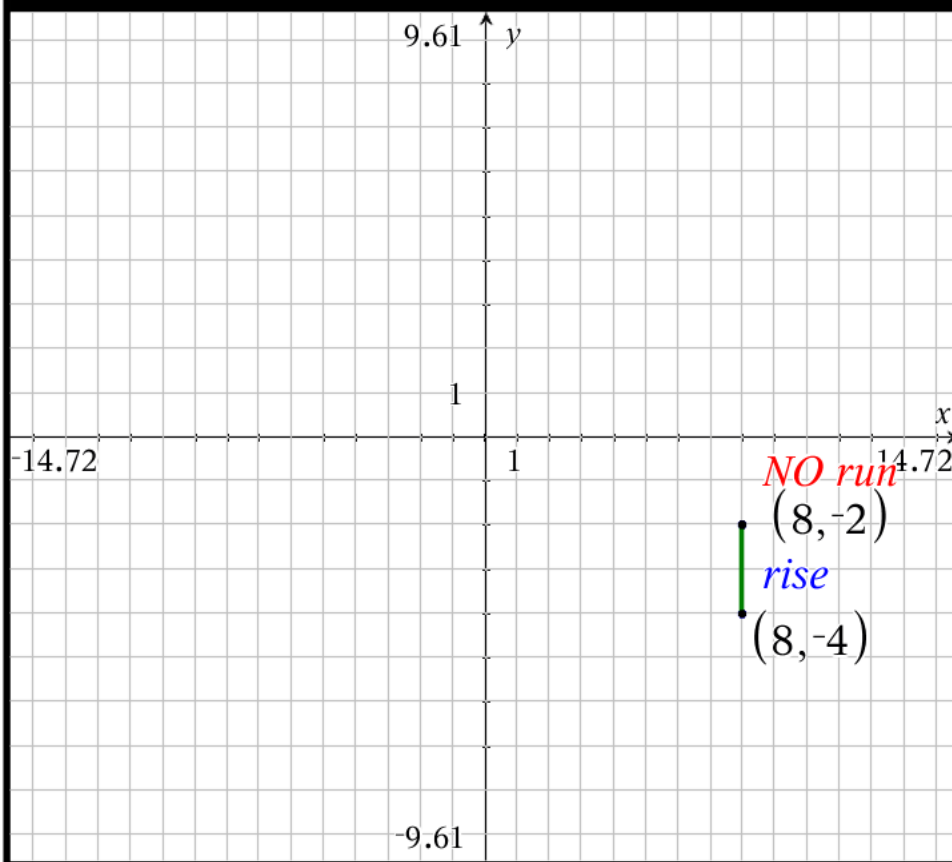
$$\text{Midpoint} \left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$$

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



Problem 2

	A	B	C	D	E	F
=						
1	x_1		8			
2	y_1		-2			
3	x_2		8			
4	y_2		-4			



Slope Intercept

Point 1 (8,-2)

Point 2 (8,-4)

"rise" from Point 1 to point 2

$$y_2 - y_1 = -2$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -2/0 = \text{undef}$$

Slope Intercept Form of the Line between the two given points

$m = \text{undef}$

When SLOPE IS UNDEFINED

THEN This is a vertical line or X line !

$$x = 8$$

How to Find Slope between two given points

Point 1 (8,-2) Point 2 (8,-4)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -2$$

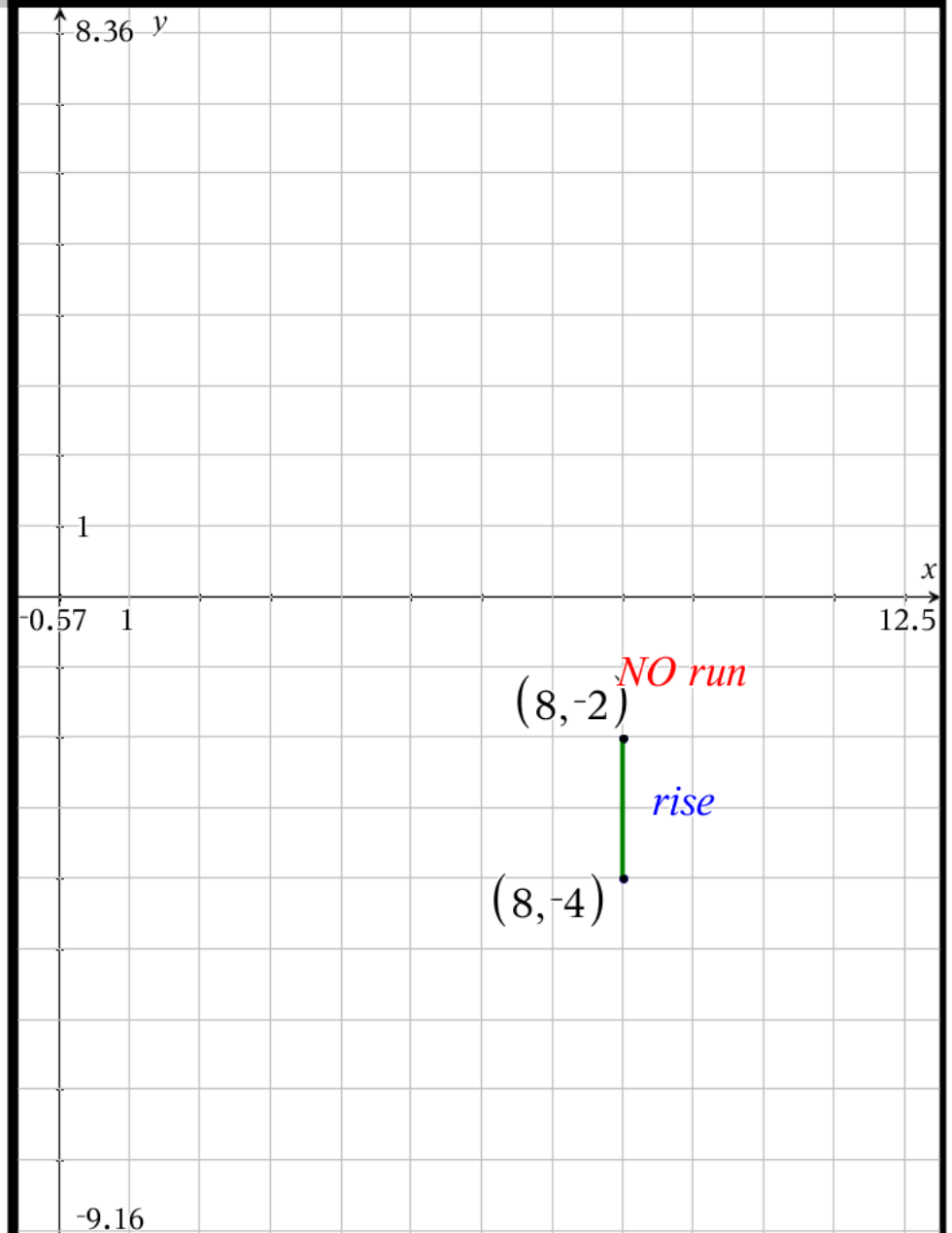
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -2/0 = \text{undef}$$



How to Find Distance between two given points

Point 1 (8,-2) Point 2 (8,-4)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -2$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

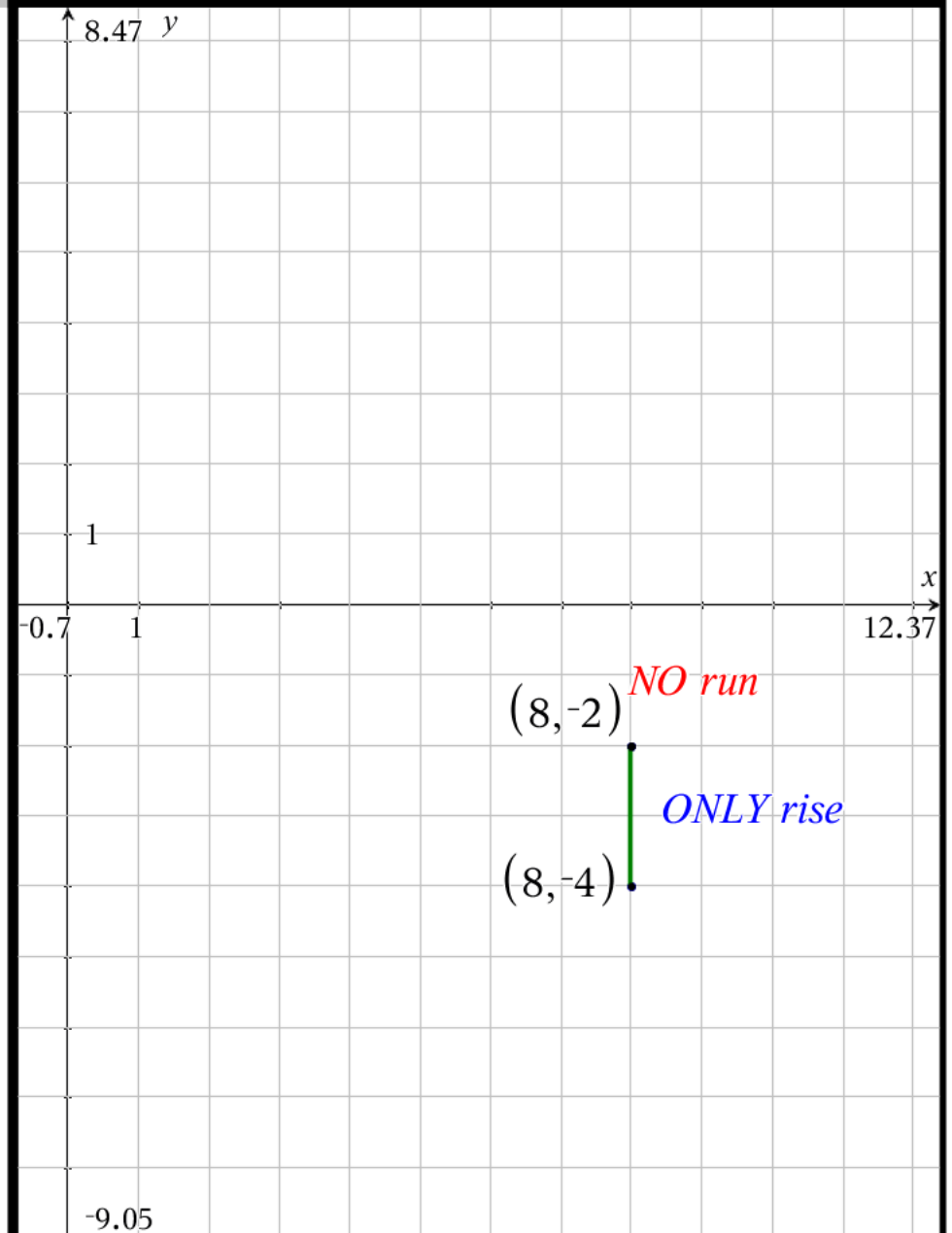
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(-2)^2 + (0)^2} = 2$$

$D = \sqrt{4}$ (exact, but maybe NOT simplified)

$= 2$ (Exact and simplified)

$\approx 2.$ (Two decimal place approx.)



How to Find Midpoint between two given points

Point 1 (8,-2) Point 2 (8,-4)

find "sum" of x coordinates from two points

$$x_2 + x_1 = 8 + 8 = 16$$

divide that sum by 2

$$m_x = 16 / 2 = \frac{x_2 + x_1}{2} = 8$$

find "sum" of y coordinates of two points

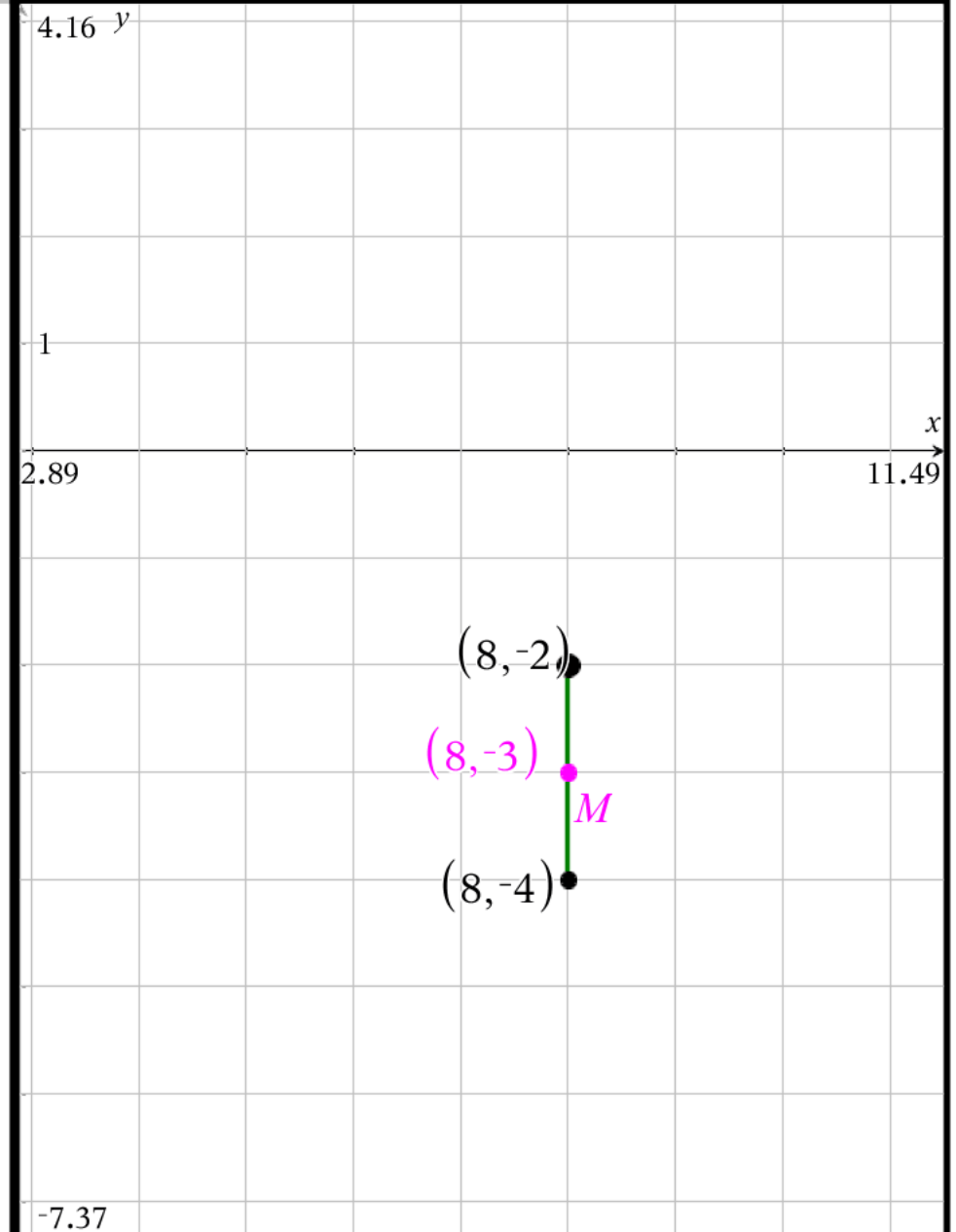
$$y_2 + y_1 = -4 + -2 = -6$$

divide that sum by 2

$$m_y = -6 / 2 = \frac{y_2 + y_1}{2} = -3$$

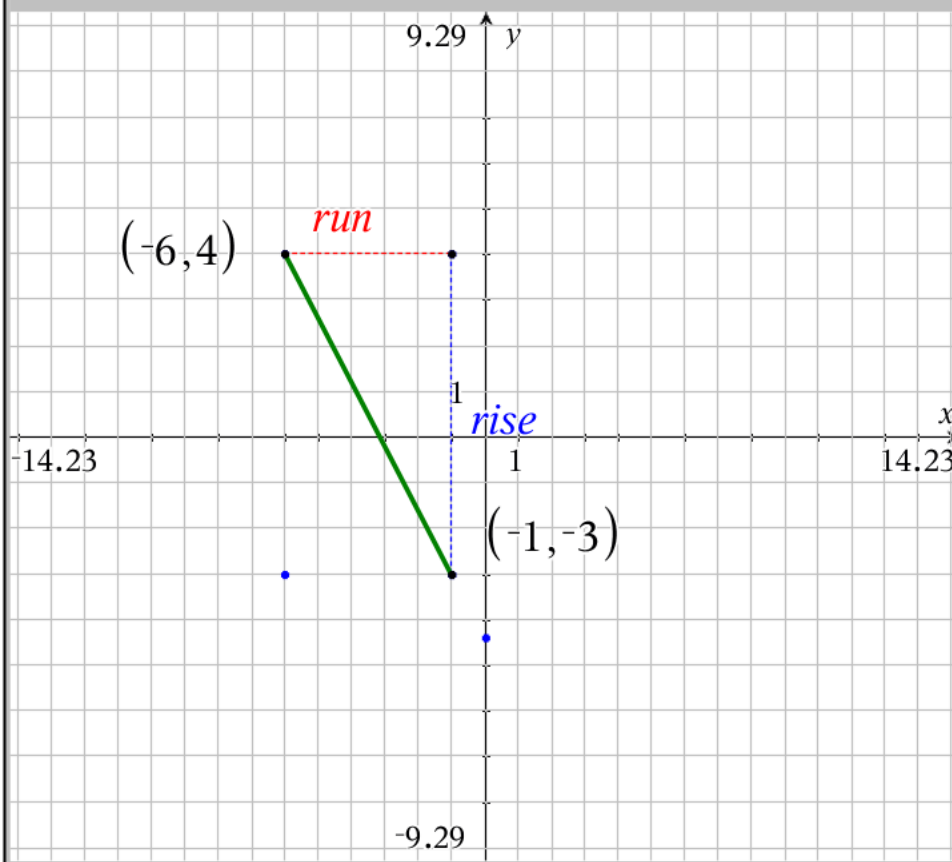
$$\text{Midpoint} \left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$$

$$(8, -3)$$



Problem 1

	A	B	C	D	E	F
=						
2	y_1		4			
3	x_2		-1			
4	y_2		-3			
5						



Slope Intercept

Point 1 $(-6, 4)$

Point 2 $(-1, -3)$

"rise" from Point 1 to point 2

$$y_2 - y_1 = -7$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 5$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -7/5 = \frac{-7}{5}$$

Slope Intercept Form of the Line between the two given points

$$y = \frac{-7 \cdot x}{5} - \frac{22}{5}$$

How to Find Slope between two given points

Point 1 (-6 ,4) Point 2 (-1 , -3)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -7$$

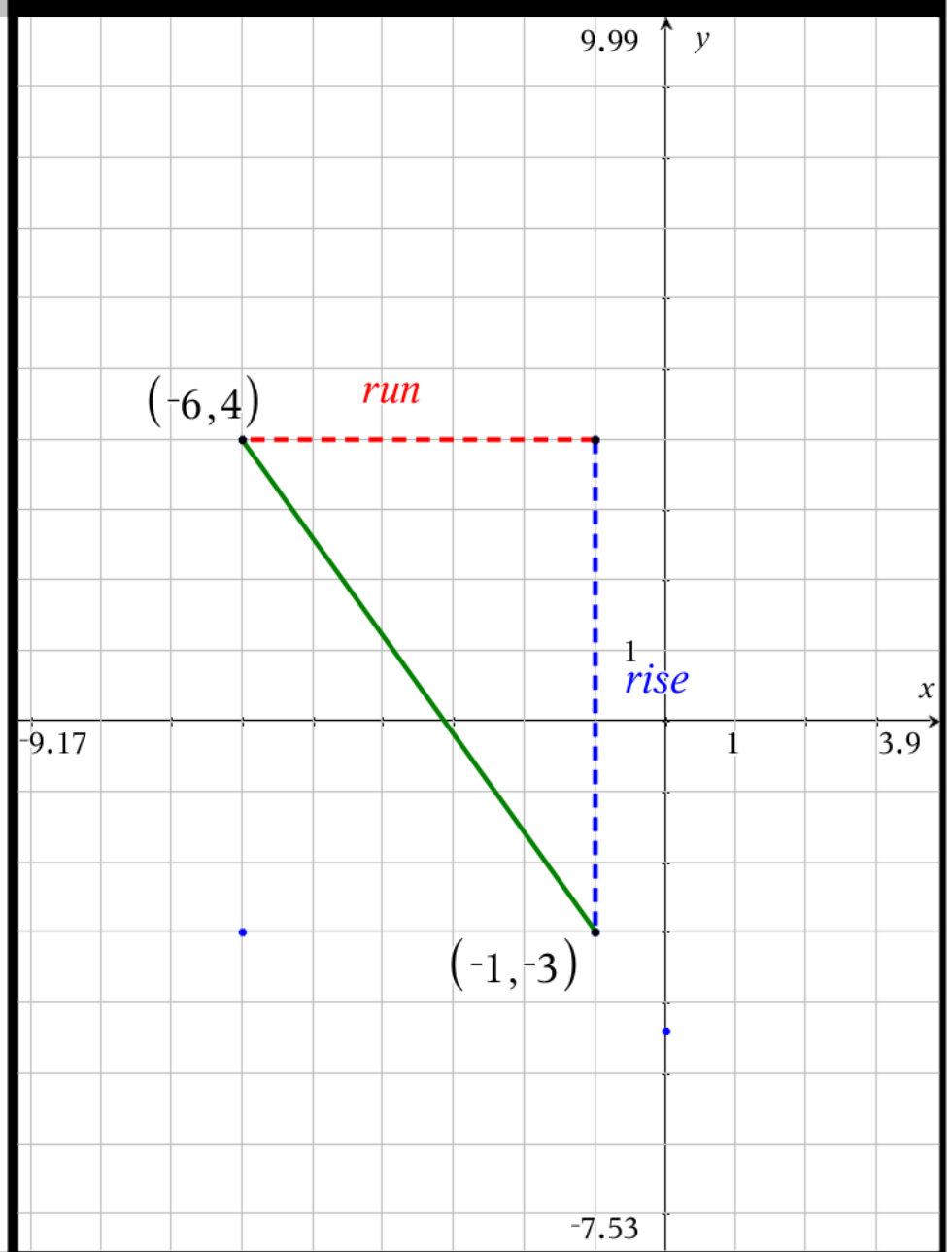
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 5$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{-7}{5} = -1.4$$



How to Find Distance between two given points

Point 1 (-6, 4) Point 2 (-1, -3)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -7$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 5$$

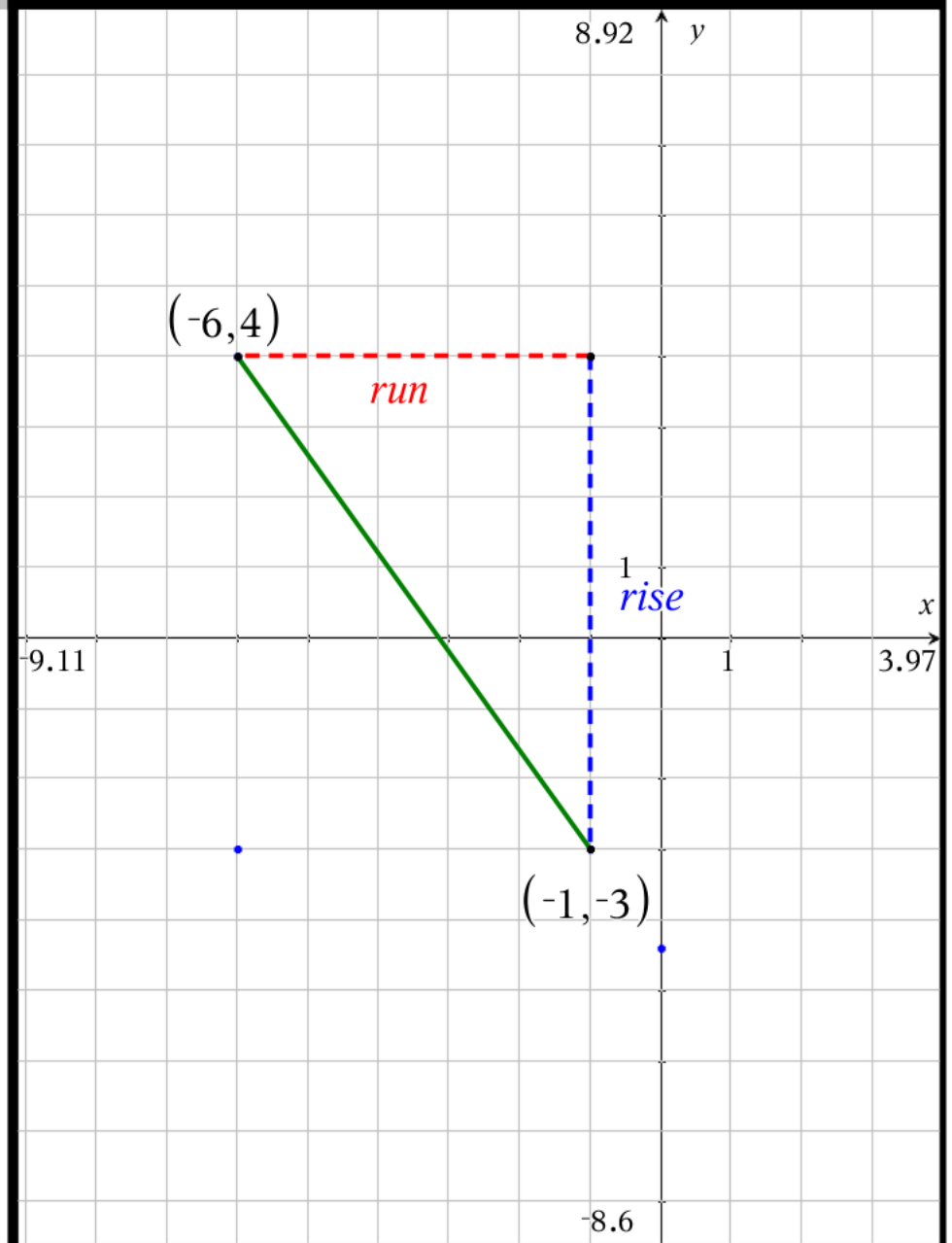
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(-7)^2 + (5)^2} = \sqrt{74}$$

$$D = \sqrt{74} \text{ (exact, but maybe NOT simplified)}$$

$$= \sqrt{74} \text{ (Exact and simplified)}$$

$$\approx 8.6 \text{ (Two decimal place approx.)}$$



How to Find Midpoint between two given points

Point 1 (-6, 4) Point 2 (-1, -3)

find "sum" of x coordinates from two points

$$x_2 + x_1 = -1 + -6 = -7$$

divide that sum by 2

$$m_x = -7 / 2 = \frac{x_2 + x_1}{2} = \frac{-7}{2}$$

find "sum" of y coordinates of two points

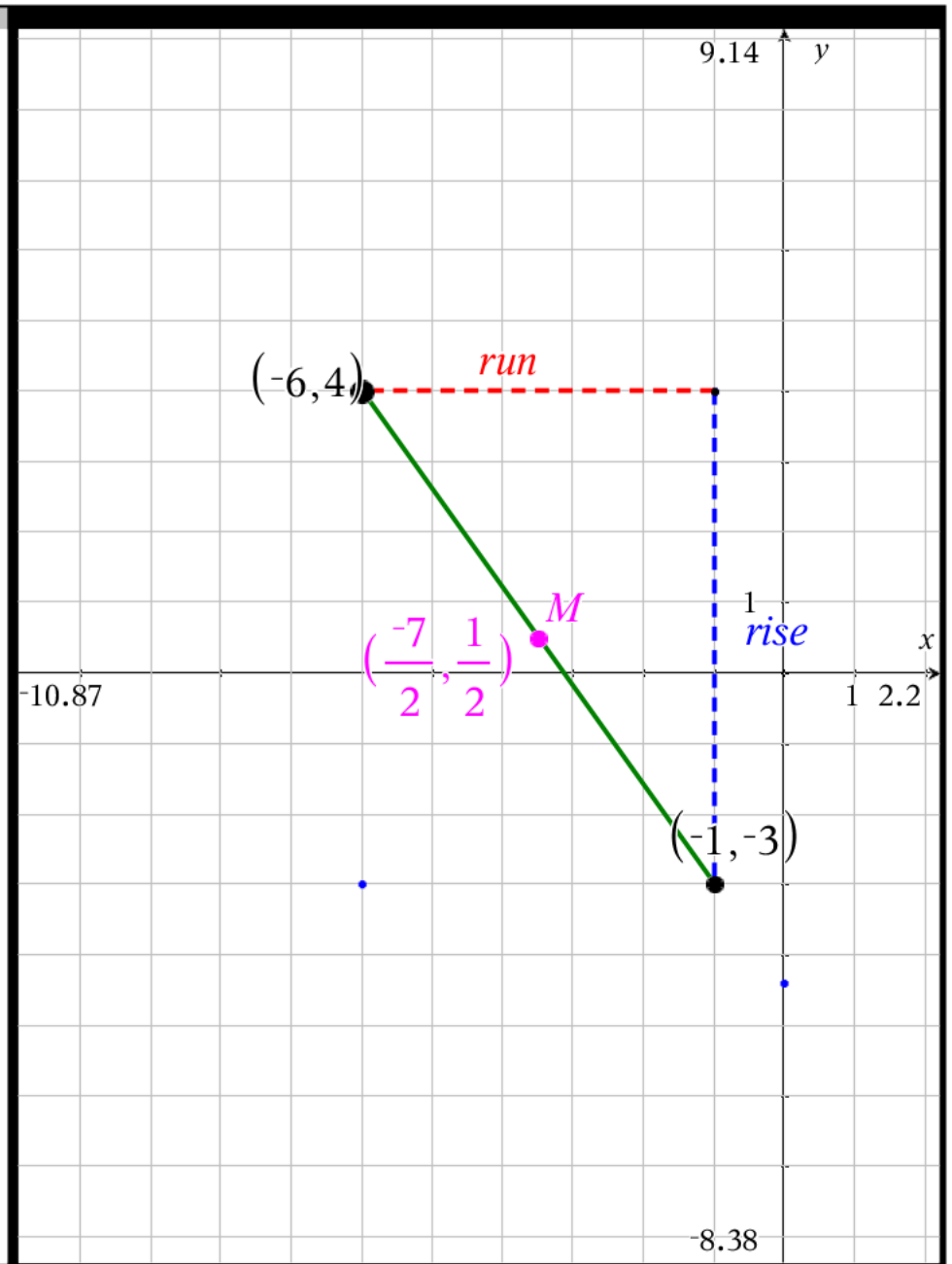
$$y_2 + y_1 = -3 + 4 = 1$$

divide that sum by 2

$$m_y = 1 / 2 = \frac{y_2 + y_1}{2} = \frac{1}{2}$$

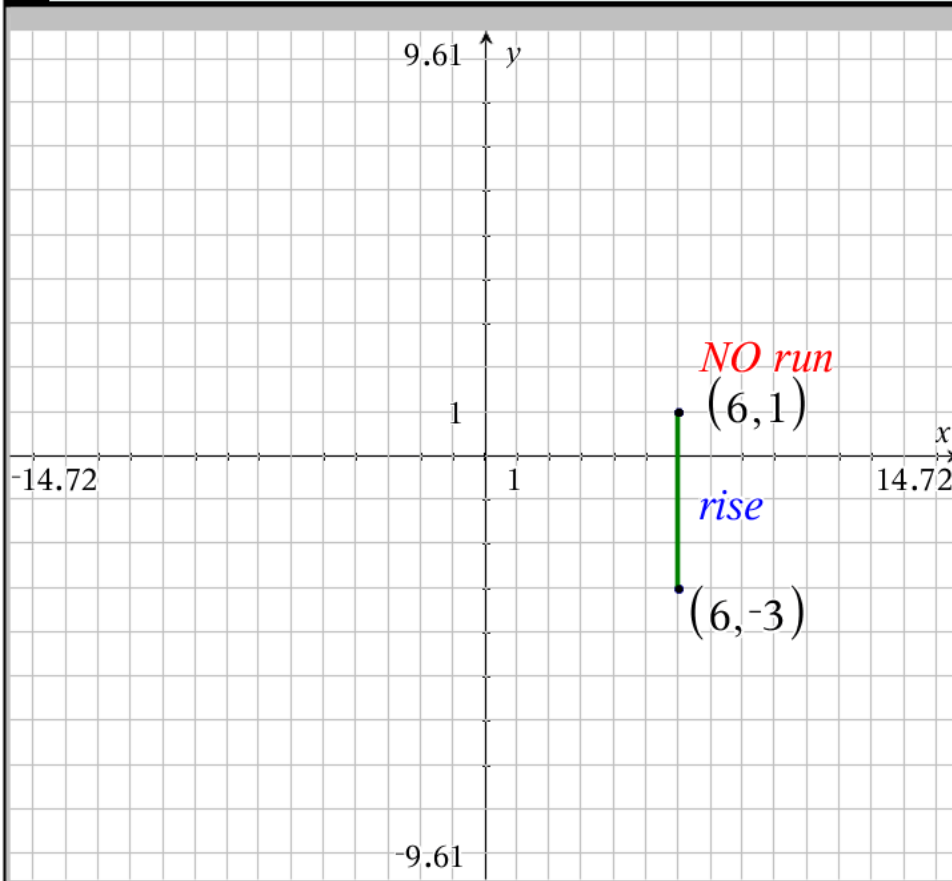
$$\text{Midpoint} \left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$$

$$\left(\frac{-7}{2}, \frac{1}{2} \right)$$



Problem 2

	A	B	C	D	E	F
=						
2	y_1		1			
3	x_2		6			
4	y_2		-3			
5						



Slope Intercept

Point 1 (6,1)

Point 2 (6,-3)

"rise" from Point 1 to point 2

$$y_2 - y_1 = -4$$

"run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = -4/0 = \text{undef}$$

Slope Intercept Form of the Line between the two given points

$m = \text{undef}$

When SLOPE IS UNDEFINED

THEN This is a vertical line or X line !

$$x = 6$$

How to Find Slope between two given points

Point 1 (6,1) Point 2 (6,-3)

IF the points have no common x or y coordinate,

THEN the line that contains point 1 and point 2 is diagonal and NOT horizontal or vertical

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -4$$

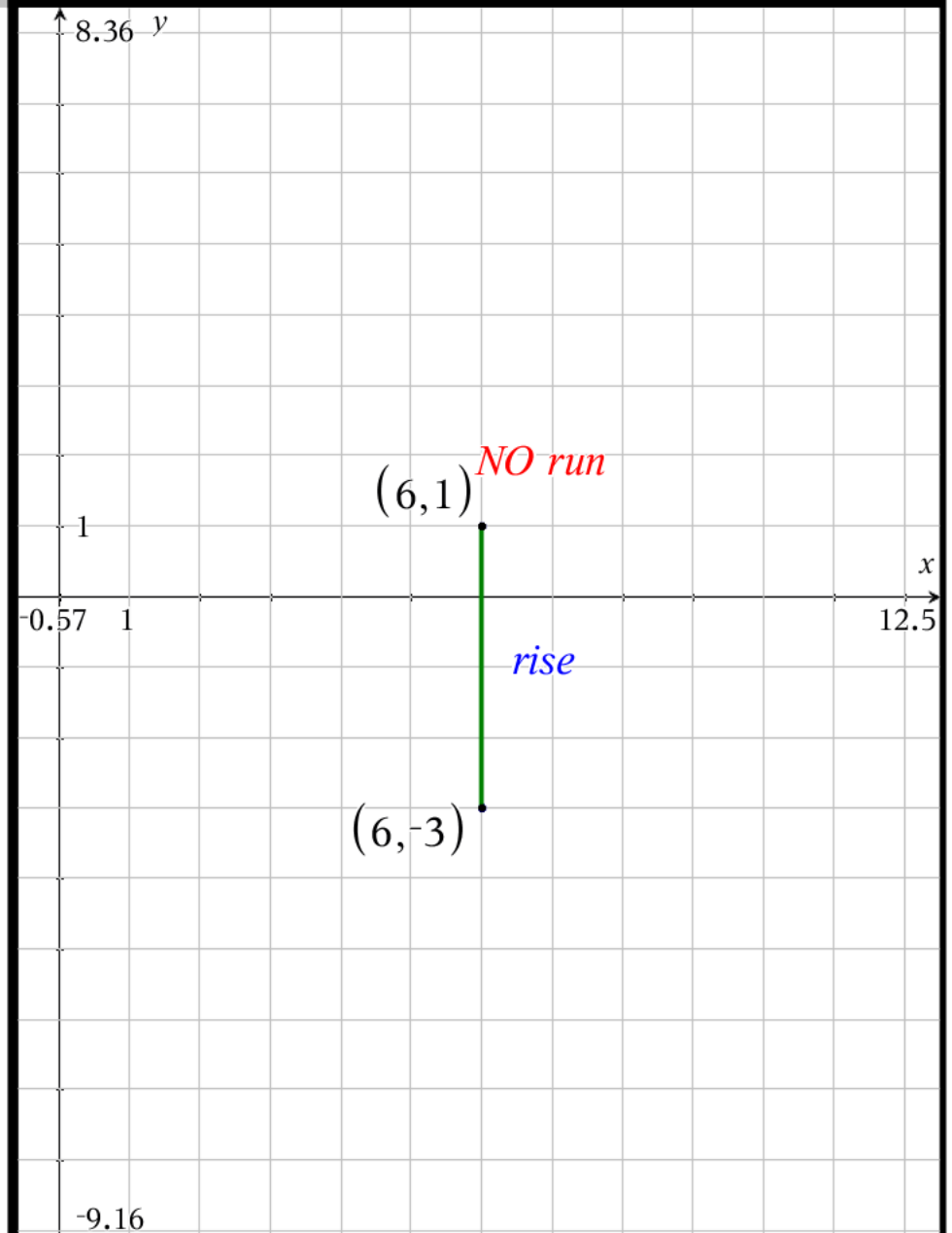
find "run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

Slope

slope from Point 1 to Point 2

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{-4}{0} = \text{undef}$$



How to Find Distance between two given points

Point 1 (6,1) Point 2 (6,-3)

find "rise" from Point 1 to point 2

$$y_2 - y_1 = -4$$

find "run" from Point 1 to Point 2

$$x_2 - x_1 = 0$$

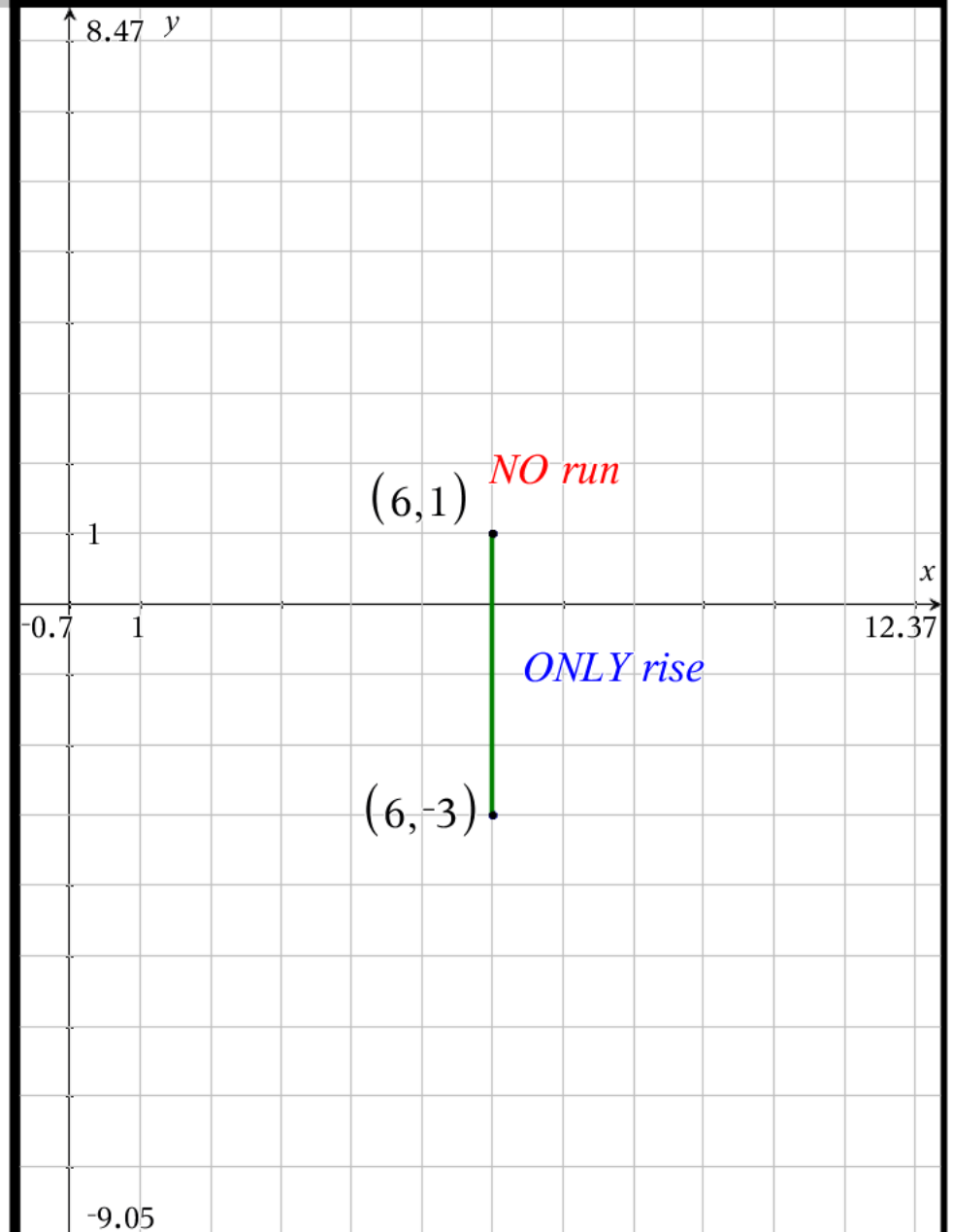
$$\text{Distance} = \sqrt{\text{rise}^2 + \text{run}^2}$$

$$= \sqrt{(-4)^2 + (0)^2} = 4$$

$D = \sqrt{16}$ (exact, but maybe NOT simplified)

$= 4$ (Exact and simplified)

≈ 4 . (Two decimal place approx.)



How to Find Midpoint between two given points

Point 1 (6,1) Point 2 (6,-3)

find "sum" of x coordinates from two points

$$x_2 + x_1 = 6 + 6 = 12$$

divide that sum by 2

$$m_x = 12 / 2 = \frac{x_2 + x_1}{2} = 6$$

find "sum" of y coordinates of two points

$$y_2 + y_1 = -3 + 1 = -2$$

divide that sum by 2

$$m_y = -2 / 2 = \frac{y_2 + y_1}{2} = -1$$

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

$$(6, -1)$$

