

Lesson 3: Length of a Line Segment

TODAY'S AGENDA

LEARNING GOAL: I will solve problems involving the length of a line segment.

HW: p.77 #2ac, 4, 5a, 6, 8, 10, 15abcd, and 20

PART 1 - WARM UP

y-int slope form

1) a) Find the equation of the line in STANDARD and VERTEX form if it passes through points A (5, -3) and B (7, 1).

b) Plot the points A and B on a Cartesian plane and connect them with a line (NOTE: DO NOT EXTEND BEYOND THE POINTS.)

Solution

① Calculate the slope

$$A(5, -3) \quad B(7, 1)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - (-3)}{7 - 5} = \frac{4}{2} = 2$$

$$m = 2$$

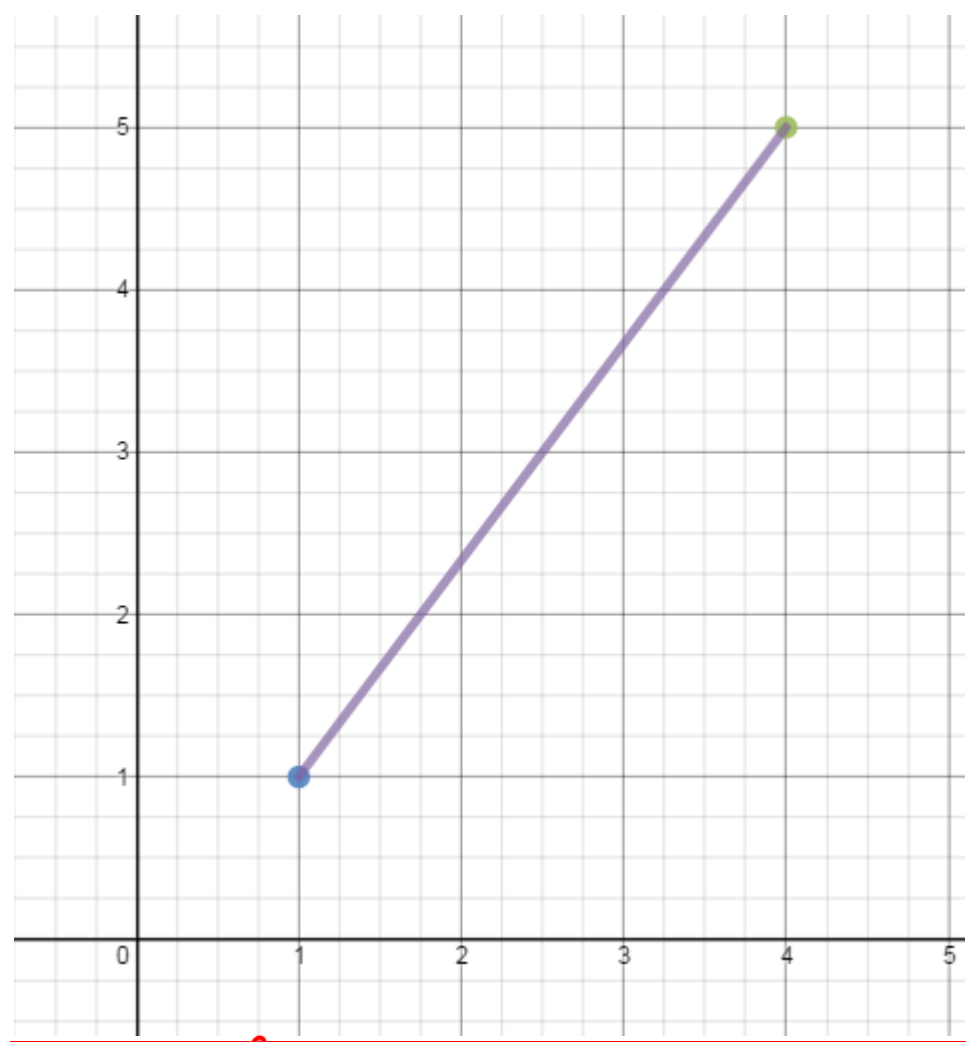
② finding b (y-int) $m=2$ B(7,1)

$$y = mx + b$$

$$1 = 2(7) + b$$

$$-13 = b$$

$$y = 2x - 13$$



std form

$$0 = 2x - y - 13 \quad \text{or} \quad 2x - y - 13 = 0$$

In general, the distance between $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is:

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

Use this formula to find the length of a line segment.

Ex 2: Find the length of the line segment D(-3, 5) and E(4, -6)

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

$$d = \sqrt{(4 - (-3))^2 + (-6 - 5)^2}$$

$$d = \sqrt{7^2 + (-11)^2}$$

$$d = \sqrt{49 + 121}$$

$$d = \sqrt{170}$$

$$d = 13.04$$

ANY
QUESTIONS