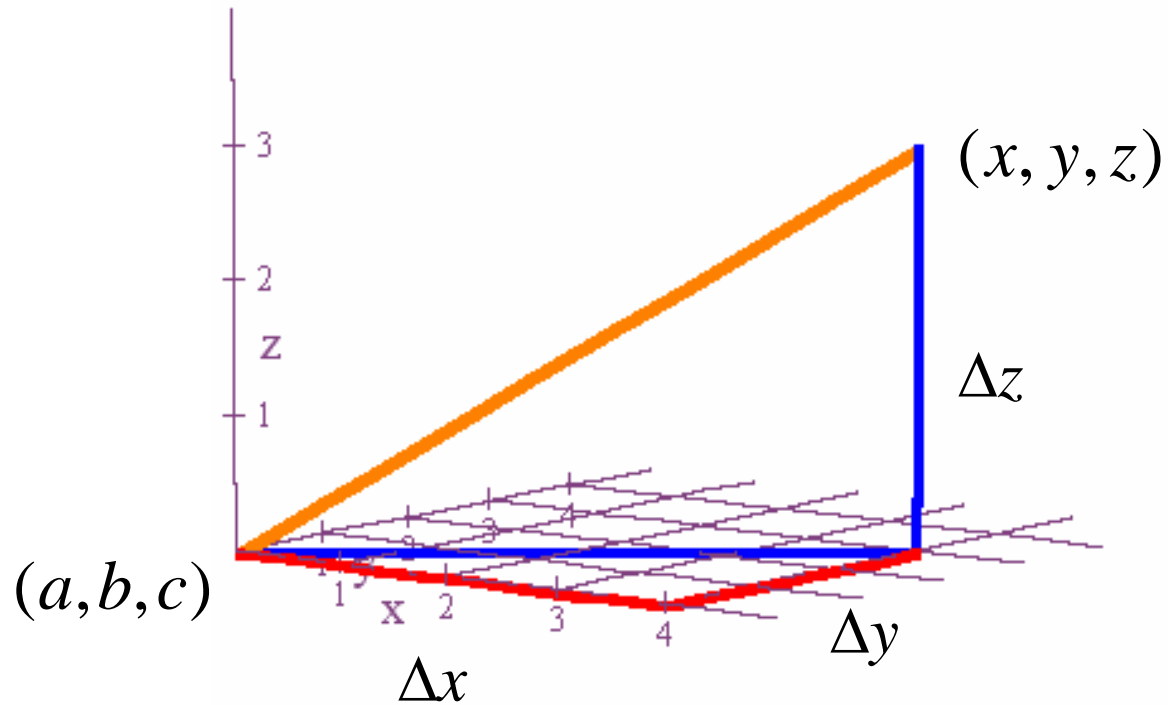


The Distance Formula in Three Dimensions

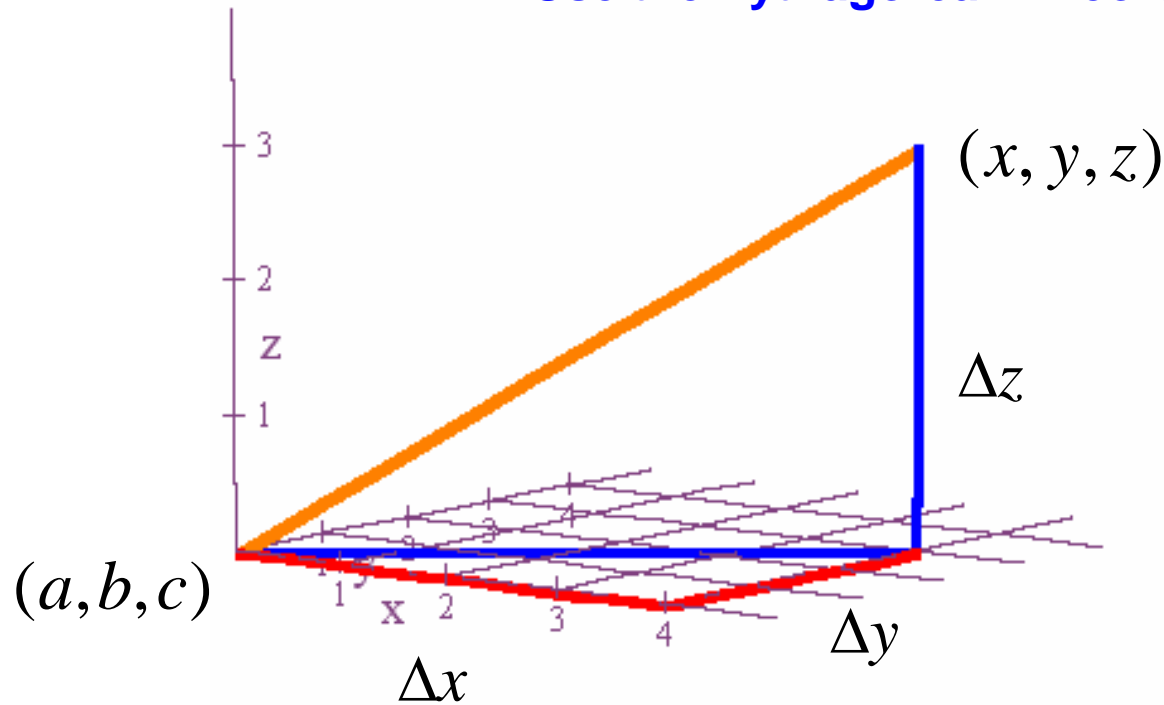
What is the length of the orange line below?



The Distance Formula in Three Dimensions

What is the length of the orange line below?

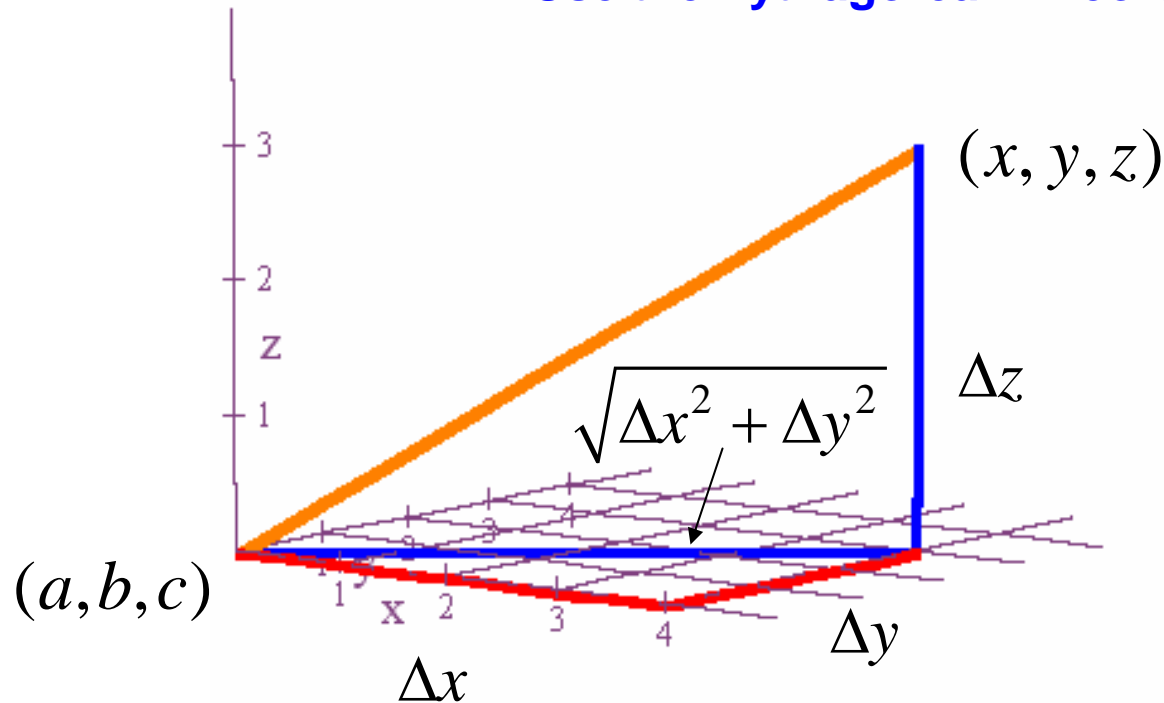
Use the Pythagorean Theorem!



The Distance Formula in Three Dimensions

What is the length of the orange line below?

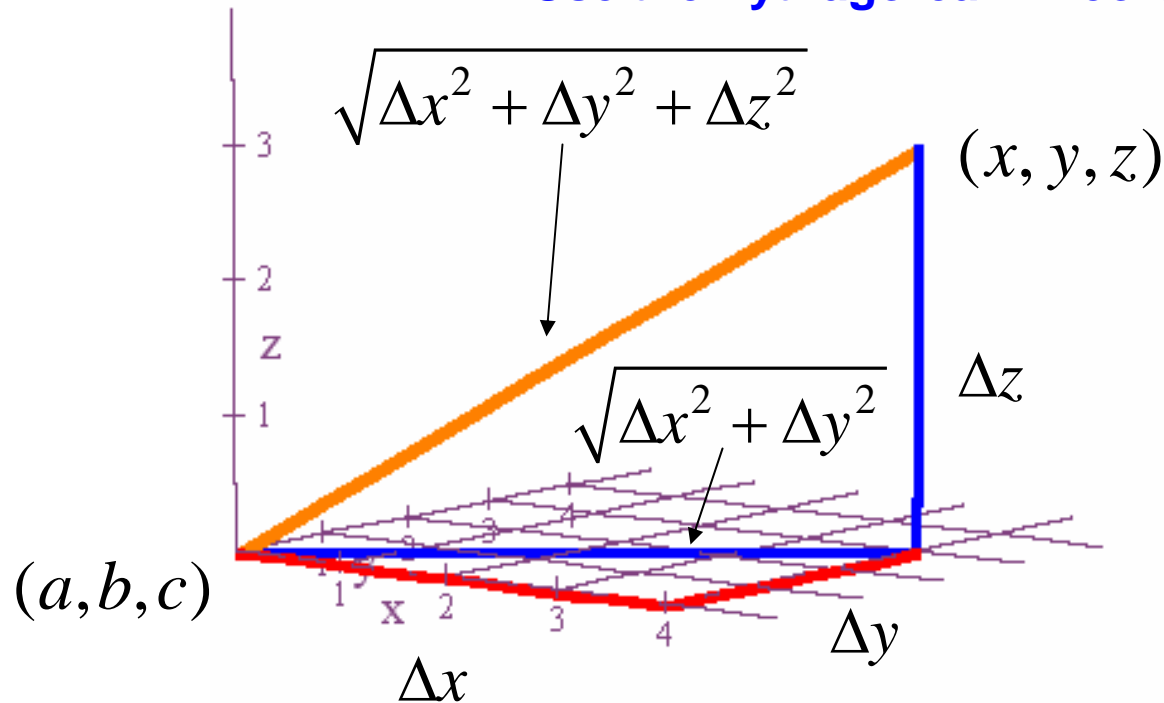
Use the Pythagorean Theorem!



The Distance Formula in Three Dimensions

What is the length of the orange line below?

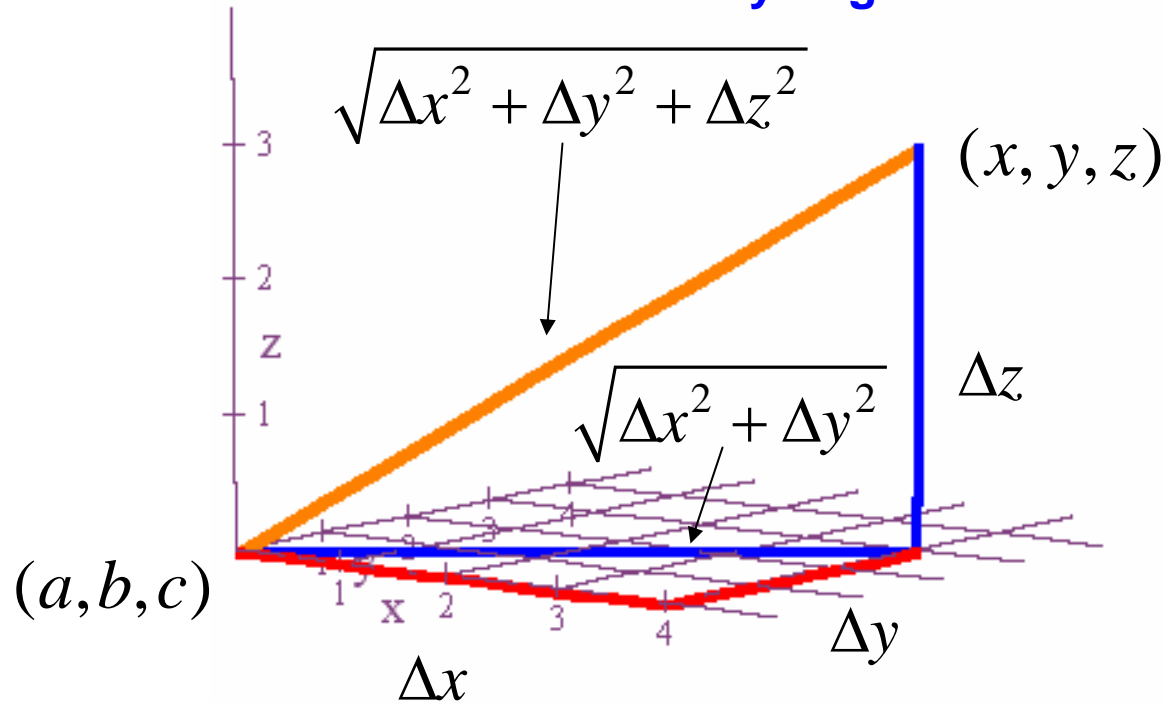
Use the Pythagorean Theorem!



The Distance Formula in Three Dimensions

What is the length of the orange line below?

Use the Pythagorean Theorem!



$$\text{Distance} = \sqrt{\Delta x^2 + \Delta y^2 + \Delta z^2} = \sqrt{(x - a)^2 + (y - b)^2 + (z - c)^2}$$

What is the distance between the points $(1,2,3)$ & $(4,8,10)$?

What is the distance between the points (1,2,3) & (4,8,10)?

$$\Delta x = 4 - 1 = 3$$

What is the distance between the points (1,2,3) & (4,8,10)?

$$\Delta x = 4 - 1 = 3$$

$$\Delta y = 8 - 2 = 6$$

What is the distance between the points (1,2,3) & (4,8,10)?

$$\Delta x = 4 - 1 = 3$$

$$\Delta y = 8 - 2 = 6$$

$$\Delta z = 10 - 3 = 7$$

What is the distance between the points (1,2,3) & (4,8,10)?

$$\Delta x = 4 - 1 = 3$$

$$\Delta y = 8 - 2 = 6$$

$$\Delta z = 10 - 3 = 7$$

$$\begin{aligned} \text{Distance} &= \sqrt{\Delta x^2 + \Delta y^2 + \Delta z^2} \\ &= \sqrt{3^2 + 6^2 + 7^2} = \sqrt{94} \approx 9.695 \end{aligned}$$