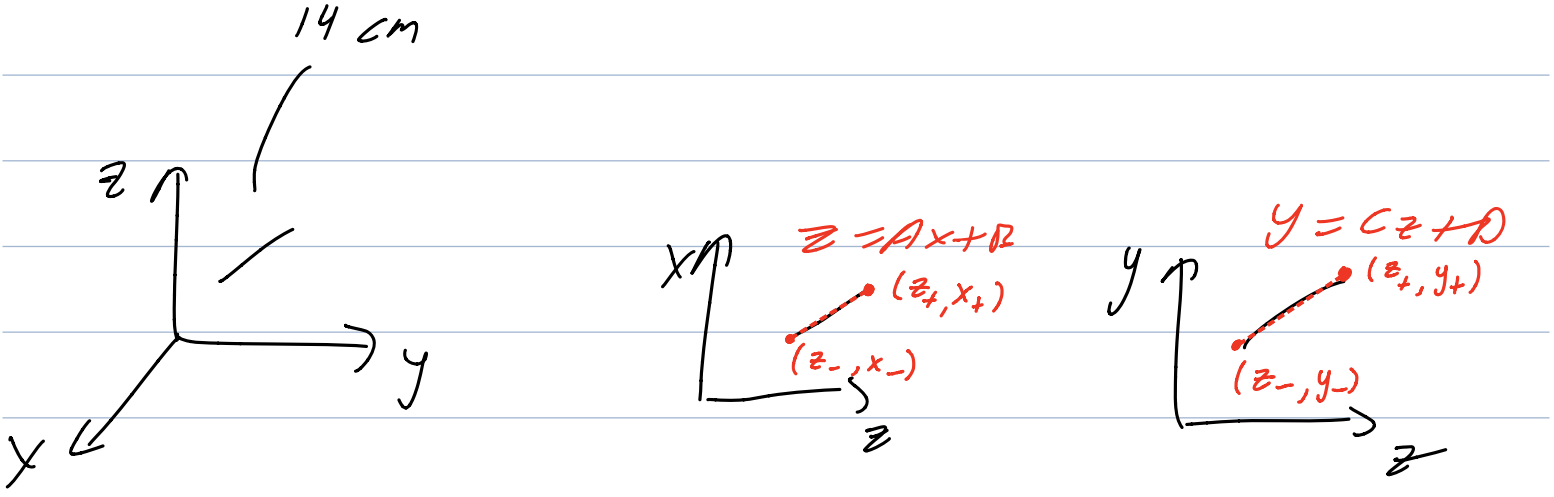
New way using trig:

We start with linear fits of the XZ & YZ projections:

$$z = Ax + B$$
$$y = Cz + D$$

We want to calculate the 2 points at the end of the linear fits w/ approx. linear segment length.



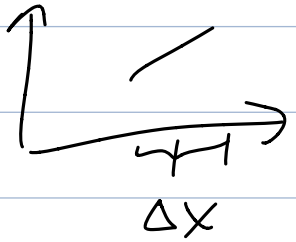
In 3D, the segment length is 14 cm.

The dotted red line is the linear fit

$$14 = \sqrt{\Delta x^2 + \Delta y^2 + \Delta z^2}, \quad \Delta z = A\Delta x, \quad \Delta y = C \cdot \Delta z = AC\Delta x$$

$$196 = \Delta x^2 + A^2\Delta x^2 + A^2C^2\Delta x^2 = (1 + A^2 + A^2C^2)\Delta x^2$$

$$\Delta x = 14/\sqrt{1 + A^2 + A^2C^2}$$



$$x_\pm = x_{avg} \pm \frac{\Delta x}{2}$$
$$z_\pm = A x_\pm + B$$
$$y_\pm = C z_\pm + D$$