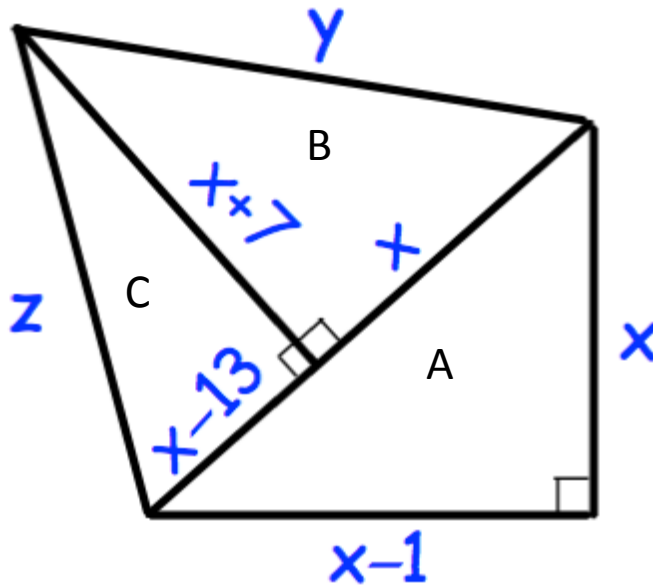


January 17<sup>th</sup>



In triangle A

$$(x - 1)^2 + x^2 = (2x - 13)^2$$

$$x^2 - 2x + 1 + x^2 = 4x^2 - 52x + 169$$

$$\text{Hence } 2x^2 + 50x - 168 = 0$$

$$\text{Therefore } x^2 + 25x - 84 = 0$$

$$(x - 21)(x - 4) = 0 \quad \text{so } \mathbf{x=21} \quad (\text{can't be } 4 \text{ as } x > 3, \text{ look at triangle C})$$

In triangle B

$$y^2 = 21^2 + 28^2 = 1225$$

$$\text{Hence } \mathbf{y = 35}$$

In triangle C

$$z^2 = 8^2 + 28^2$$

$$\text{Hence } \mathbf{z = \sqrt{848} = 4\sqrt{53}}$$