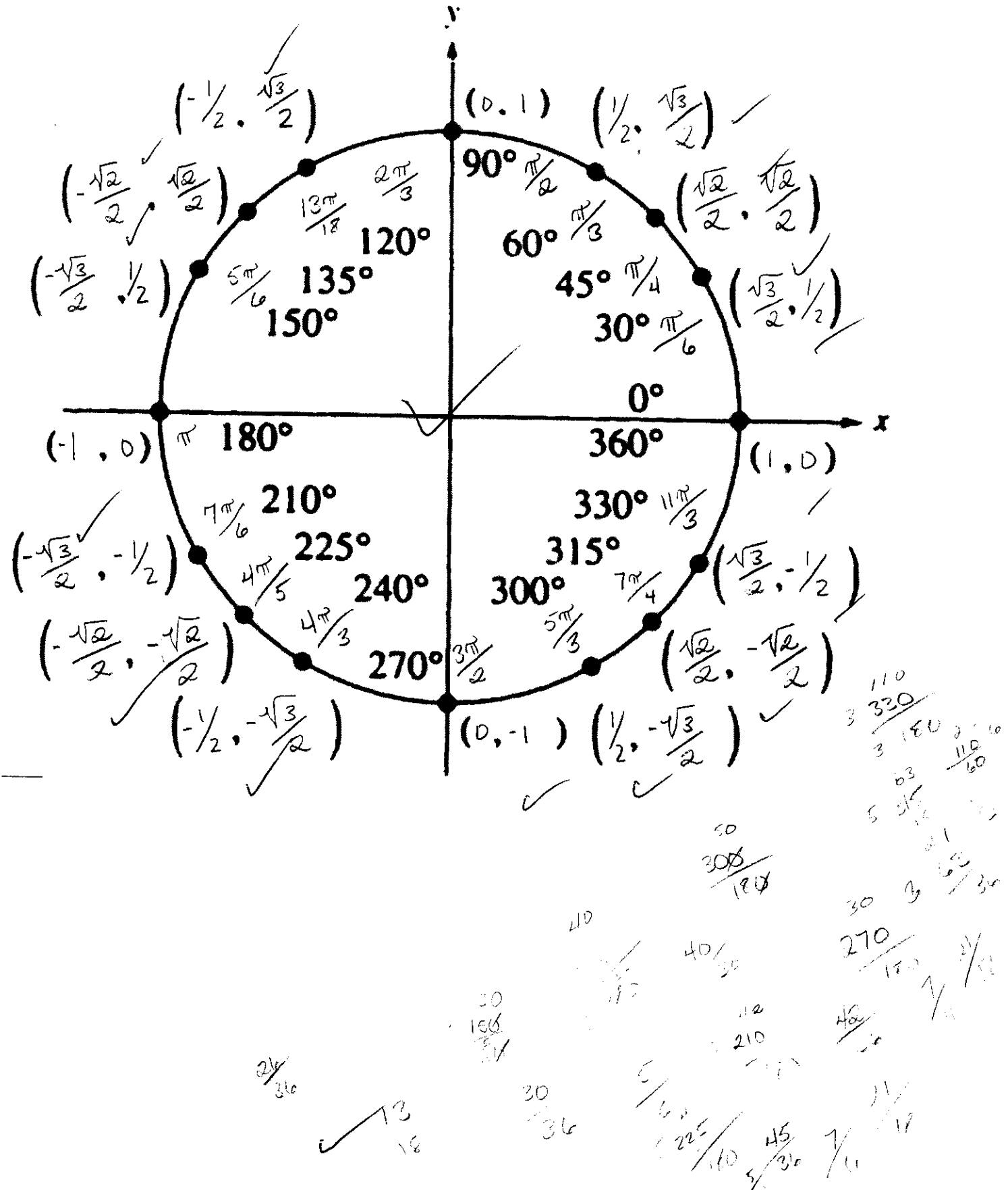


Mathematics 1613: Trigonometry Quiz #3

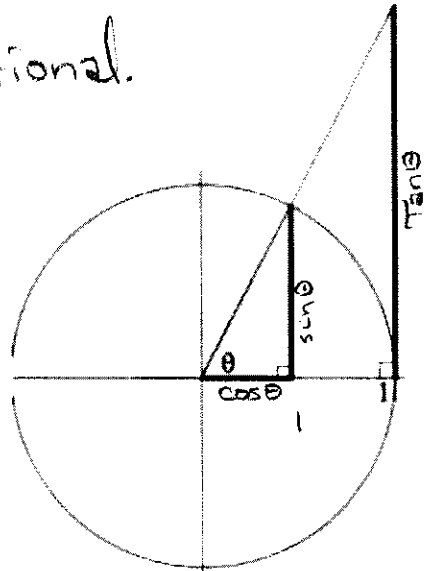
Problem 8: Complete the unit circle:



Name: Caityn Ray

Problem 9: Find an expression for the indicated (bolded) lengths. Justify and explain all of your steps!

* Similar Δ s are proportional.



$$\frac{\sin \theta}{\cos \theta} = \frac{h}{1}$$

$$\frac{\sin \theta}{\cos \theta} = \tan \theta$$

$\frac{\sin \theta}{\cos \theta} \Rightarrow$ always = tan

$\frac{\text{opp}}{\text{hyp}} = \frac{\text{adj}}{\text{hyp}}$

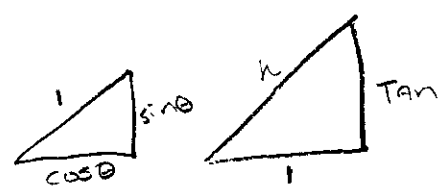
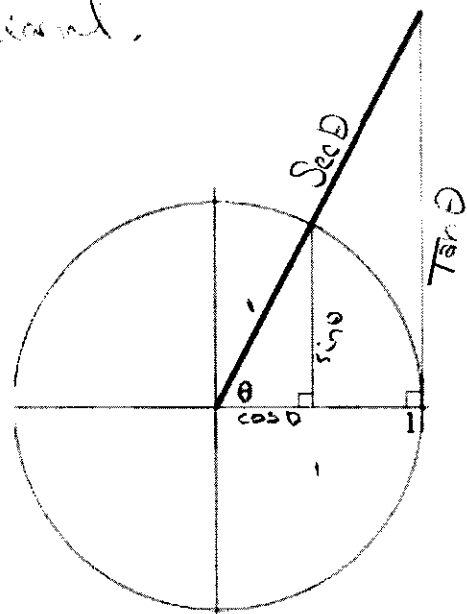
$\frac{\text{opp}}{\text{hyp}} = \frac{\text{hyp}}{\text{adj}}$

$$\frac{\text{opp}}{\text{adj}} = \tan$$

Problem 10: Using a similar technique, find an expression in terms of sine and cosine for the indicated length:

* Similar Δ s are proportional.

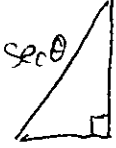
$$\frac{1}{\frac{\text{adj}}{\text{hyp}}} = \frac{\text{hyp}}{\text{adj}} \Rightarrow \sec \theta$$



$$\frac{1}{\cos} = \frac{h}{h}$$

$$\frac{1}{\cos \theta} = \sec \theta$$

Problem 11: Using the diagram(s) above, derive the identity $1 + \tan^2 \theta = \sec^2 \theta$ (that is, explain how we know that this identity is true).

Using the pythagorean theorem on the big triangle  we get $1^2 + \tan^2 \theta = \sec^2 \theta$