

Quiz #9, Math 115

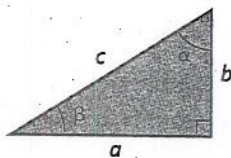
Nov 10th, 2006

Name: _____

Direction: Please *print* your name. And *show your work* for credit.

1. Solve the following triangle, where $\alpha = 50^\circ$ and $c = 10$.

Hint: $\sin 50^\circ = 0.766$, $\cos 50^\circ = 0.643$



$$\beta = 90^\circ - \alpha = 90^\circ - 50^\circ = 40^\circ$$

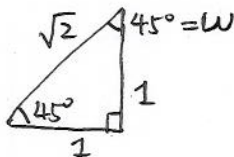
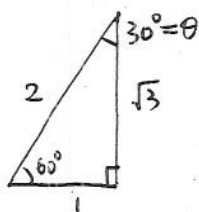
$$\frac{a}{c} = \sin 50^\circ \quad \frac{b}{c} = \cos 50^\circ$$

$$\Rightarrow a = c \cdot \sin 50^\circ = 10 \times 0.766 = 7.66$$

$$b = c \cdot \cos 50^\circ = 10 \times 0.643 = 6.43$$

2. If $\theta = 30^\circ$, and $w = 45^\circ$, find the exact value of $\cos \theta$, $\cot \theta$, $\sin w$ and $\tan w$.

Hint: Use the special right triangles.



$$\cos \theta = \frac{\sqrt{3}}{2}$$

$$\cot \theta = \frac{\sqrt{3}}{1} = \sqrt{3}$$

$$\sin w = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\tan w = \frac{1}{1} = 1$$

3. If $\sin \alpha = \frac{3}{5}$ and $\tan \alpha = \frac{3}{4}$. Find the values of the following trigonometric functions:

$\cos(90^\circ - \alpha)$, $\cot(90^\circ - \alpha)$, $\cot \alpha$ and $\csc \alpha$.

Complementary relationships:

$$\cos(90^\circ - \alpha) = \sin \alpha = \frac{3}{5}$$

$$\cot(90^\circ - \alpha) = \tan \alpha = \frac{3}{4}$$

Reciprocal relationships:

$$\cot \alpha = \frac{1}{\tan \alpha} = \frac{4}{3}$$

$$\csc \alpha = \frac{1}{\sin \alpha} = \frac{5}{3}$$