

Name: \_\_\_\_\_

Score: \_\_\_\_\_ /15

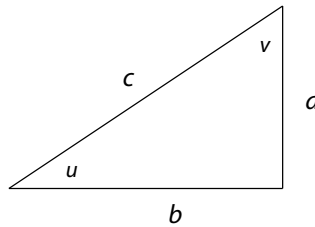
## Worksheet 16 (Due Tue, May 27)

Math 1060Q – Summer 2014

Professor Hohn

Three questions will be chosen randomly to be graded. You must show all of your work to receive full credit!

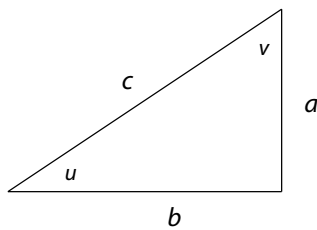
1. Use the right triangle below for the following:



Suppose  $a = 2$  and  $b = 7$ . Evaluate

- (a)  $c$
- (b)  $\cos u$
- (c)  $\sin u$
- (d)  $\tan u$
- (e)  $\cos v$
- (f)  $\sin v$
- (g)  $\tan v$

2. Use the right triangle below for the following:



Suppose  $b = 4$  and  $c = 6$ . Evaluate

(a)  $a$

(b)  $\cos u$

(c)  $\sin u$

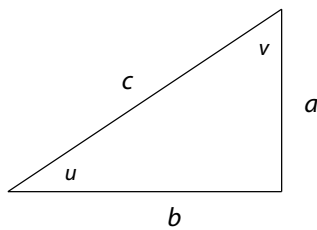
(d)  $\tan u$

(e)  $\cos v$

(f)  $\sin v$

(g)  $\tan v$

3. Use the right triangle below for the following:

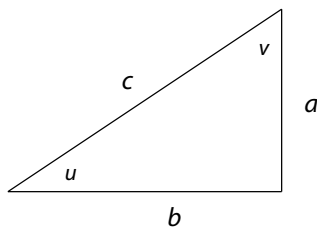


Suppose  $c = 4$  and  $\cos u = \frac{3}{5}$ . Evaluate

(a)  $a$

(b)  $b$

4. Use the right triangle below for the following:



Suppose  $\cos u = \frac{2}{3}$ . Evaluate

(a)  $\sin u$

(b)  $\tan u$

(c)  $\cos v$

(d)  $\sin v$

(e)  $\tan v$

5. Verify the following identity.

$$\frac{1 + \sin \theta}{\cos \theta} = \sec \theta + \tan \theta$$

6. Verify the following identity.

$$\frac{\sec \theta}{1 + \tan^2 \theta} = \cos \theta$$

7. Find the smallest positive number  $x$  such that

$$\tan x = 3 \tan \left( \frac{\pi}{2} - x \right).$$

8. Show that

$$(\cos \theta + \sin \theta)^2 = 1 + 2 \cos \theta \sin \theta$$

for every number  $\theta$ .

9. Show that

$$\tan\left(\theta + \frac{\pi}{2}\right) = -\frac{1}{\tan\theta}$$

for every angle  $\theta$  that is not an integer multiple of  $\frac{\pi}{2}$ . Interpret this result in terms of the characterization of the slopes of perpendicular lines.