

Name: _____

Score: _____ /15

Worksheet 17 (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 Sum and Difference Identities to find the exact value.

(a) $\cos(75^\circ)$

(b) $\cos\left(\frac{13\pi}{12}\right)$

(c) $\sin\left(\frac{11\pi}{12}\right)$

(d) $\cot\left(\frac{11\pi}{12}\right)$

(e) $\cos\left(\frac{7\pi}{12}\right)$

2. If α is a Quadrant IV angle with $\cos(\alpha) = \frac{\sqrt{5}}{5}$ and $\sin \beta = \frac{\sqrt{10}}{10}$ where $\frac{\pi}{2} < \beta < \pi$, find

(a) $\cos(\alpha + \beta)$

(b) $\sin(\alpha + \beta)$

(c) $\tan(\alpha + \beta)$

(d) $\cos(\alpha - \beta)$

3. Use the Half-angle Formulas to find the exact value.

(a) $\cos(75^\circ)$

(b) $\sin\left(\frac{\pi}{12}\right)$

(c) $\sin\left(\frac{5\pi}{8}\right)$

(d) $\tan\left(\frac{\pi}{8}\right)$

(e) $\cos\left(\frac{7\pi}{12}\right)$

4. Verify the identity.

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

5. Suppose θ is a Quadrant I angle with $\sin \theta = x$. Verify that

$$\cos \theta = \sqrt{1 - x^2}.$$

6. Challenge Problem: Explain why the right triangle below has area $9 \sin(2\theta)$.

