

Exam 2

Name:

Date: June 6, 2013

P 1. [10 points] State the formula that corresponds to the named identity.

(a) Power-reducing formula for cosine

(b) Sum formula for sine

(c) Sum formula for cosine

(d) Double-angle formula for sine

(e) Double-angle formula for cosine

P 2. [6 points] Verify the identity.

$$\frac{\tan^2 \theta}{\sec \theta} = \sin \theta \tan \theta$$

P 3. [6 points] Find the exact value of

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

$$\left[\text{Hint: } \frac{7\pi}{12} = \frac{5\pi}{6} - \frac{\pi}{4} \right]$$

P 4. [12 points] Find the exact values of $\sin 2u$, $\cos 2u$, and $\tan 2u$ given that

$$\tan u = \frac{3}{5}$$

and $0 < u < \frac{\pi}{2}$.

P 5. [12 points] Find the exact value of

$$\cos(u + v)$$

given that $\sin u = \frac{2}{7}$ and $\cos v = \frac{-1}{3}$. (Both u and v are in Quadrant II.)

P 6. [8 points] Find all solutions to the given trigonometric equation on the interval $[0, 2\pi)$.

(a) $\cos x = 1$

(b) $\sin x = -\frac{\sqrt{3}}{2}$

P 7. [10 points] Solve

$$\tan 3x = 1$$

P 8. [10 points] Solve

$$\cos^2 x - 4 \cos x = 5$$

P 9. [10 points] Solve

$$\sin(x + \pi) - \sin x + 1 = 0.$$