

Math153.02

Due: December 12, 2000 by 5 p.m.

Name:

Score:

Exam 6 (Sections 7.3 - 8.2)

Part 1: Section 7.3

1. Solve the equation.

a. $3 \csc^2 x = 4$

b. $\sin^2 x = 3 \cos^2 x$

2. Find all solutions of the equation in the interval $[0, 2\pi)$.

a. $\cos^2 x + \sin x = 1$

b. $\sec x \csc x = 2 \csc x$

Part 2: Section 7.4

3. Find the exact value of the expression.

a. $\cos\left(\frac{2\pi}{3} - \frac{\pi}{6}\right)$

b. $\cos\frac{\pi}{16}\cos\frac{3\pi}{16} - \sin\frac{\pi}{16}\sin\frac{3\pi}{16}$

4. Find the exact values of the sine, cosine, and tangent of the angle.

a. $\frac{5\mathbf{p}}{12}$

b. 255°

5. Write the expression as the sine, cosine, or tangent of an angle.

a. $\cos \frac{\mathbf{p}}{7} \cos \frac{\mathbf{p}}{5} - \sin \frac{\mathbf{p}}{7} \sin \frac{\mathbf{p}}{5}$

b. $\frac{\tan 25^\circ + \tan 10^\circ}{1 - \tan 25^\circ \tan 10^\circ}$

6. Write the trigonometric expression as an algebraic expression.

$\sin(\arctan 2x - \arccos x)$

Part 3: Section 7.5

7. Find the exact solutions of the equation in the interval $[0, 2\mathbf{p})$.

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

8. Find the exact values of $\sin 2u$, $\cos 2u$, and $\tan 2u$ using the double angle formulas.

$$\cos u = -\frac{2}{3}, \frac{\mathbf{p}}{2} < u < \mathbf{p}$$

9. Write the product as a sum or difference, or write the sum or difference as a product.

a. $\sin x + \sin 5x$

b. $\cos 2q \cos 4q$

Part 4: Sections 8.1 & 8.2

10. Use the Law of Sines to solve the triangle. Given $B = 28^\circ$, $C = 104^\circ$, $a = 3\frac{5}{8}$.

11. Use the Law of Cosines to solve the triangle. Given $C = 103^\circ$, $a = \frac{3}{8}$, $b = \frac{3}{4}$.