

Math 125
Exam 4
Fall 2010

Name:

1. 10 pts. Find the exact value of $\sin^{-1}\left(\sin \frac{9\pi}{8}\right)$.

2. 15 pts. Find the inverse of $f(x) = 5 \sin x - 3$. State the domain and range of f and f^{-1} either in the *wrong* way textbook does, or for 5 bonus points do it the *right* way.

3. 10 pts. each Find the exact value of each.

(a) $\tan\left[\sin^{-1}\left(-\frac{1}{2}\right)\right]$

(b) $\sec\left(\tan^{-1}\frac{1}{2}\right)$

4. 5 pts. Use a calculator to find the value of $\csc^{-1}(5)$ rounded to two decimal places.

5. 10 pts. each Establish each identity.

(a) $\frac{\sec \theta}{\csc \theta} + \frac{\sin \theta}{\cos \theta} = 2 \tan \theta$

(b) $3 \sin^2 \theta + 4 \cos^2 \theta = 3 + \cos^2 \theta$

(c) $\cos\left(\frac{3\pi}{2} + \theta\right) = \sin \theta$

(d) $\cos^4 \theta - \sin^4 \theta = \cos(2\theta)$

6. 10 pts. each Find the exact value of each.

(a) $\tan\left(\frac{19\pi}{12}\right)$

(b) $\cos 40^\circ \cos 10^\circ + \sin 40^\circ \sin 10^\circ$

(c) $\cos 165^\circ$

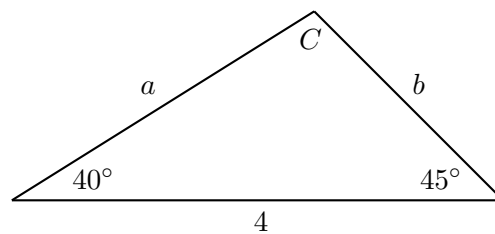
7. 10 pts. each Solve each equation on the interval $0 \leq \theta < 2\pi$.

(a) $3\sqrt{2} \cos \theta + 2 = -1$

(b) $2 \sin^2 \theta = 3(1 - \cos \theta)$

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

8. 10 pts. Solve the triangle.



9. 10 pts. each Solve each triangle.

(a) $B = 10^\circ$, $C = 100^\circ$, $b = 2$.

(b) $A = 10^\circ$, $a = 3$, $b = 10$.

(c) $a = 4$, $b = 3$, $c = 6$.