

1. 10 pts. Find the exact value of  $\sin^{-1}\left(\sin \frac{11\pi}{8}\right)$ .

2. 15 pts. Find the inverse of  $f(x) = 5 - 7 \sin x$ . State the domain and range of  $f$  and  $f^{-1}$  in the way demonstrated in class (not the way the book does it).

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  $\csc^{-1}(12)$  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)  $\tan\left(\frac{17\pi}{12}\right)$

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

(c)  $\cos 165^\circ$

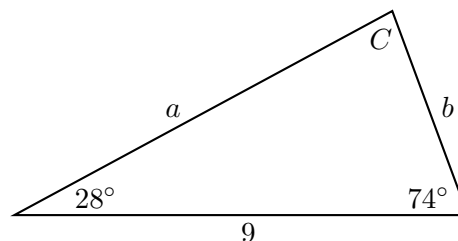
7. 10 pts. each Solve each equation on the interval  $0 \leq \theta < 2\pi$ .

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