

## PRE-CALCULUS PRACTICE TEST II

No Calculator

1. Fill in the table.

$x$	$\sin^{-1}(x)$	$\cos^{-1}(x)$	$\tan^{-1}(x)$
-1			
	$\frac{\pi}{3}$		
		$\frac{2\pi}{3}$	
$-\frac{\sqrt{2}}{2}$			
1			
$-\sqrt{3}$			

2. Evaluate the expression algebraically.

a.  $\tan\left(\cos^{-1}\left(-\frac{1}{5}\right)\right)$

b.  $\cos\left(\tan^{-1}\left(-\frac{1}{5}\right)\right)$

3. Solve the equations algebraically.

a.  $\sec(\theta) = 2$ . Find all solutions.

d.  $2\cos^2\theta + \cos\theta = 0$  over  $0 \leq \theta < 2\pi$ .

b.  $2\sin^2(\theta) + 1 = 3$  over  $-2\pi \leq \theta \leq 2\pi$ .

e.  $\sin^2\theta = 2\cos\theta + 2$  over  $0 \leq \theta < 2\pi$ .

c.  $\sin(\theta) = \frac{1}{2}$ . Find all solutions.

f.  $\sin(2\theta) - 1 = 0$ . Find all solutions.

4. If  $\cos(\alpha) = \frac{\sqrt{5}}{5}$  where  $0 \leq \alpha \leq \frac{\pi}{2}$ , and  $\sin(\beta) = -\frac{4}{5}$  where  $-\frac{\pi}{2} \leq \beta < 0$ ; then find

a.  $\sin(\alpha + \beta)$

b.  $\cos(\alpha + \beta)$

c.  $\sin(\alpha - \beta)$

d.  $\cot(\beta)$

5. Prove the identities.

a.  $\sin(x) \cdot \csc(x) - \cos^2(x) = \sin^2(x)$

c.  $\sin(\alpha + \beta) + \sin(\alpha - \beta) = 2 \sin \alpha \cos \beta$

b.  $(1 - \cos^2 \theta)(1 + \cot^2 \theta) = 1$

e.  $\tan^2(x) \cos^2(x) + \cot^2(x) \sin^2(x) = 1$

6. Find the exact values of

a.  $\sin(75)$

b.  $\cos\left(\frac{11\pi}{12}\right)$

