

## Practice Test - Chapter 5

Date \_\_\_\_\_ Period \_\_\_\_\_

**Solve each equation for  $0 \leq \theta < 2\pi$ .**

1)  $\frac{\sqrt{2}}{2} = \cos \theta$

2)  $0 = 4 + 4\cos \theta$

**Use identities to find the value of each expression.**3) Find  $\cot \theta$  and  $\csc \theta$ 

if  $\sin \theta = -\frac{3}{5}$  and  $\cot \theta > 0$ .

**Verify each identity.**

4)  $-\cot x \sin x = -\cos x$

5)  $\frac{\sec x}{\cot^2 x + 1} = \frac{\tan x}{\csc x}$

**Solve each equation for  $0 \leq \theta < 2\pi$ .**

6)  $1 = \sin^2 \theta$

7)  $1 + 2\tan^2 \theta = \tan^2 \theta + 2\tan \theta$

8)  $-3\cot \theta = \sqrt{2}\csc \theta - \cot \theta$

**Find the exact value of each.**

9)  $\tan 75$

10)  $\sin 195$

11)  $\cos 100\cos 40 + \sin 100\sin 40$

12)  $\frac{\tan 76 + \tan 104}{1 - \tan 76\tan 104}$

13)  $\sin \theta = -\frac{4}{5}$  where  $540 \leq \theta < 630$   
Find  $\tan \frac{\theta}{2}$

14)  $\sin \theta = \frac{4}{5}$  where  $0 \leq \theta < 90$   
Find  $\tan \frac{\theta}{2}$

15)  $\sin \theta = -\frac{15}{17}$  where  $270 \leq \theta < 360$   
Find  $\tan 2\theta$

16)  $\sin \theta = -\frac{4}{5}$  where  $180 \leq \theta < 270$   
Find  $\sin 2\theta$

**Verify each identity.**

17)  $\frac{1 + \cos 2x}{\sin^2 x} = \frac{2}{\tan^2 x}$

**Find the exact value of each expression.**

18)  $\cos 75\cos 45$

**Write each product as a sum or difference.**

19)  $4\cos 7A\cos 5A$

**Write each sum or difference as a product.**

20)  $3\sin 11\theta - 3\sin 5\theta$

**Solve each equation for  $0 \leq \theta < 2\pi$ .**

21)  $\sin 2\theta - 3\cos \theta = \sqrt{3}\cos \theta - 3\cos \theta$

**Solve each equation using degrees. For equations that use  $\theta$ , restrict your answers to  $[0, 2\pi)$ . For ones that use  $x$ , provide all solutions.**

22)  $0 = -\cos 8x - \cos 4x$

## Answers to Practice Test - Chapter 5 (ID: 1)

1)  $\left\{\frac{\pi}{4}, \frac{7\pi}{4}\right\}$

2)  $\{\pi\}$

3)  $\frac{4}{3}$  and  $-\frac{5}{3}$

4)  $-\cot x \sin x$       Use  $\cot x = \frac{\cos x}{\sin x}$

5)  $\frac{\sec x}{\cot^2 x + 1}$       Use  $\cot^2 x + 1 = \csc^2 x$

$-\frac{\sin x \cos x}{\sin x}$       Cancel common factors

$\frac{\sec x}{\csc^2 x}$       Use  $\sec x = \frac{1}{\cos x}$

$-\cos x$       ■

$\frac{1}{\cos x \csc^2 x}$       Use  $\csc x = \frac{1}{\sin x}$

$\frac{\sin x}{\csc x \cos x}$       Use  $\tan x = \frac{\sin x}{\cos x}$

$\frac{\tan x}{\csc x}$       ■

6)  $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

7)  $\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$

8)  $\left\{\frac{3\pi}{4}, \frac{5\pi}{4}\right\}$

9)  $2 + \sqrt{3}$

10)  $\frac{\sqrt{2} - \sqrt{6}}{4}$

11)  $\frac{1}{2}$

12) 0

13) -2

14)  $\frac{1}{2}$

15)  $\frac{240}{161}$

16)  $\frac{24}{25}$

17)  $\frac{1 + \cos 2x}{\sin^2 x}$       Use  $\sin^2 x = \frac{1 - \cos 2x}{2}$

18)  $\frac{\sqrt{3} - 1}{4}$

$\frac{2(1 + \cos 2x)}{1 - \cos 2x}$       Use  $\tan^2 x = \frac{1 - \cos 2x}{1 + \cos 2x}$

$\frac{2}{\tan^2 x}$       ■

19)  $2\cos 2A + 2\cos 12A$

20)  $6\cos 8\theta \sin 3\theta$

21)  $\left\{\frac{\pi}{3}, \frac{\pi}{2}, \frac{2\pi}{3}, \frac{3\pi}{2}\right\}$

22)  $\left\{\frac{\pi}{12} + \frac{\pi n}{6}\right\}$