

Chapter 5/6 Test - Practice Test

DO NOT WRITE ON THIS TEST!

Simplify the identity.

1)  $\frac{1 - \cos x}{\sin x} = ?$

- A)  $-\csc x - \cot x$   
C)  $\csc x - \cot x$

- B)  $\csc x + \cot x$   
D)  $\csc x - \cot x + 1$

Complete the identity.

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

- A)  $\cot x$   
C) 0

- B)  $\tan x$   
D)  $\sin x$

3)  $\frac{\sin x - \cos x}{\sin x} + \frac{\cos x - \sin x}{\cos x} = ?$

- A)  $2 + \sec x \csc x$   
C)  $2 - \sec x \csc x$

- B)  $\sec x \csc x$   
D)  $1 - \sec x \csc x$

4)  $\frac{\csc x \cot x}{\sec x} = ?$

- A)  $\sec^2 x$   
C)  $\csc^2 x$

- B) 1  
D)  $\cot^2 x$

5)  $\frac{(\sin x + \cos x)^2}{1 + 2 \sin x \cos x} = ?$

- A) 0  
C) 1

- B)  $-\sec^2 x$   
D)  $1 - \sin x$

6)  $\sec x - \frac{1}{\sec x} = ?$

- A)  $-2 \tan^2 x$   
C)  $\sec x \csc x$

- B)  $\sin x \tan x$   
D)  $1 + \cot x$

7)  $\frac{\cos(\alpha - \beta)}{\cos \alpha \cos \beta} = ?$

- A)  $1 + \cot \alpha \tan \beta$   
B)  $\tan \alpha \tan \beta + \cot \beta$   
C)  $1 + \cot \alpha \cot \beta$   
D)  $1 + \tan \alpha \tan \beta$

8)  $\sin(\alpha + \beta) \sin(\alpha - \beta) = ?$

- A)  $\sin^2 \beta - \sin^2 \alpha$   
C)  $\cos^2 \beta - \cos^2 \alpha$

- B)  $\sin^2 \alpha - \cos^2 \beta$   
D)  $\cos^2 \beta + \cos^2 \alpha$

9)  $8 \sin x \cos^3 x + 8 \sin^3 x \cos x = ?$

- A)  $4 \cos x$   
C)  $4 \sin 2x$

- B)  $4 \cos 2x$   
D)  $4 \sin x$

10)  $(\sin x - \cos x)^2 = ?$

- A)  $\sin 2x$   
C)  $1 + \cos 2x$

- B)  $1 - \sin 2x$   
D)  $1 - \cos 2x$

Find the exact value of the expression.

11)  $\cos\left(\frac{2\pi}{9} - \frac{\pi}{18}\right)$

Write the expression as the cosine of an angle, knowing that the expression is the right side of the formula for  $\cos(\alpha - \beta)$  with particular values for  $\alpha$  and  $\beta$ .

12)  $\cos\left(\frac{2\pi}{9}\right) \cos\left(\frac{\pi}{18}\right) + \sin\left(\frac{2\pi}{9}\right) \sin\left(\frac{\pi}{18}\right)$

Find the exact value by using a sum or difference identity.

13)  $\sin(185^\circ - 65^\circ)$

Find the exact value of the expression.

14)  $\sin 215^\circ \cos 95^\circ - \cos 215^\circ \sin 95^\circ$

Use the given information to find the exact value of the expression.

15) Find  $\cos(\alpha + \beta)$ .  $\cos \alpha = -\frac{7}{25}$ ,  $\alpha$  lies in

quadrant III, and  $\sin \beta = \frac{\sqrt{21}}{5}$ ,  $\beta$  lies in

quadrant II.

Find the exact value by using a difference identity.

16)  $\tan 105^\circ$

Use trigonometric identities to find the exact value.

17)  $\frac{\tan 175^\circ - \tan 55^\circ}{1 + \tan 175^\circ \tan 55^\circ}$

Find the exact value under the given conditions.

18)  $\cos \alpha = -\frac{7}{25}$ ,  $\frac{\pi}{2} < \alpha < \pi$ ;  $\sin \beta = -\frac{\sqrt{21}}{5}$ ,  $\pi <$

$\beta < \frac{3\pi}{2}$  Find  $\tan(\alpha + \beta)$ .

Use the given information to find the exact value of the expression.

19) Find  $\sin 2\theta$ .  $\cos \theta = \frac{7}{25}$ ,  $\theta$  lies in quadrant IV.

Write the expression as the sine, cosine, or tangent of a double angle. Then find the exact value of the expression.

20)  $\cos^2 120^\circ - \sin^2 120^\circ$

Use a half-angle formula to find the exact value of the expression.

21)  $\cos \frac{5\pi}{12}$

22)  $\tan 112.5^\circ$

Use the given information given to find the exact value of the trigonometric function.

23)  $\sec \theta = -\frac{5}{4}$ ,  $\theta$  lies in quadrant II Find  $\sin \frac{\theta}{2}$ .

Use substitution to determine whether the given x-value is a solution of the equation.

24)  $\cos 2x = -\sqrt{2}$ ,  $x = \frac{-5\pi}{4}$

Find all solutions of the equation.

25)  $2 \cos x + \sqrt{2} = 0$

26)  $\tan x \sec x = -2 \tan x$

Solve the equation on the interval  $[0, 2\pi)$ .

27)  $\sin 4x = \frac{\sqrt{3}}{2}$

28)  $2 \sin^2 x = \sin x$

29)  $\csc^5 x - 4 \csc x = 0$

Solve the equation on the interval  $[0, 2\pi)$ .

30)  $\tan^2 x \sin x = \tan^2 x$

Solve the equation on the interval  $[0, 2\pi)$ .

31)  $2 \cos^2 x + \sin x - 2 = 0$

Solve each triangle. Round lengths to the nearest tenth and angle measures to the nearest degree.

32)  $B = 31^\circ$ ,  $b = 14$ ,  $a = 26$

33)  $A = 26^\circ$ ,  $B = 51^\circ$ ,  $c = 24$

34)  $a = 8$ ,  $b = 14$ ,  $c = 16$

35)  $B = 28^\circ$ ,  $b = 18.4$ ,  $a = 19.6$

36)  $a = 6$ ,  $b = 9$ ,  $C = 115^\circ$

Find the area of the triangle having the given measurements. Round to the nearest square unit.

37)  $A = 20^\circ$ ,  $b = 17$  meters,  $c = 7$  meters

Solve the problem.

38) To find the distance AB across a river, a distance BC of 1221 m is laid off on one side of the river. It is found that  $B = 110.8^\circ$  and  $C = 13.7^\circ$ . Find AB. Round to the nearest meter.

39) Two airplanes leave an airport at the same time, one going northwest (bearing  $135^\circ$ ) at 409 mph and the other going east at 325 mph. How far apart are the planes after 4 hours (to the nearest mile)?

40) The distance from home plate to dead center field in Sun Devil Stadium is 400 feet. A baseball diamond is a square with a distance from home plate to first base of 90 feet. How far is it from first base to dead center field?