

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

Calculator Permitted

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.****Find all solutions in the interval  $[0, 2\pi)$ .**

1)  $\sin^2 x - \cos^2 x = 0$

A)  $x = \frac{\pi}{4}, \frac{\pi}{3}$

C)  $x = \frac{\pi}{4}$

B)  $x = \frac{\pi}{4}, \frac{\pi}{6}$

D)  $x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

1) \_\_\_\_\_

2)  $\sin^2\left(\frac{x}{2}\right) = \sin^2 x$

A)  $\frac{2\pi}{3}, \frac{4\pi}{3}$

B)  $0, \frac{2\pi}{3}$

C)  $0, \frac{2\pi}{3}, \frac{4\pi}{3}$

D)  $0, \pi$

2) \_\_\_\_\_

**Find an exact value.**

3)  $\sin \frac{-11\pi}{12}$

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

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

C)  $\frac{\sqrt{6} + \sqrt{2}}{4}$

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

3) \_\_\_\_\_

**Solve for x in the given interval.**

4)  $\sec x = -2, \pi \leq x \leq \frac{3\pi}{2}$

A)  $\frac{5\pi}{4}$

B)  $\frac{2\pi}{3}$

C)  $\frac{7\pi}{6}$

D)  $\frac{4\pi}{3}$

4) \_\_\_\_\_

**Convert the radian measure to degree measure. Use the value of  $\pi$  found on a calculator and round answers to two decimal places.**

5) 0.668

A)  $37.57^\circ$

B)  $38.27^\circ$

C)  $38.77^\circ$

D)  $39.27^\circ$

5) \_\_\_\_\_

**Use basic identities to simplify the expression.**

6)  $\sin^2 \theta + \tan^2 \theta + \cos^2 \theta$

A)  $\cos^3 \theta$

B)  $\sin \theta$

C)  $\tan^2 \theta$

D)  $\sec^2 \theta$

6) \_\_\_\_\_

7)  $\frac{\cos^2 \theta}{\sin^2 \theta} + \csc \theta \sin \theta$

A) 1

B)  $\tan^2 \theta$

C)  $\csc^2 \theta$

D)  $\sec^2 \theta$

7) \_\_\_\_\_

**Simplify the expression.**

8)  $\csc\left(\frac{\pi}{2} - x\right) \cos(-x)$

A)  $-\csc^2 x$

B) -1

C)  $\cos^2 x$

D) 1

8) \_\_\_\_\_

9)  $\frac{1 - \sin^2 x}{\sin x - \csc x}$  9) \_\_\_\_\_

- A)  $-\sin x$                       B)  $\cos^2 x$                       C)  $-\cos x$                       D)  $\sin^2 x$

10)  $\frac{1}{1 - \cos x} + \frac{1}{1 + \cos x}$  10) \_\_\_\_\_

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

**Convert the angle to decimal degrees and round to the nearest hundredth of a degree.**

11)  $54^\circ 42' 16''$  11) \_\_\_\_\_

- A) 54.70                      B) 54.76                      C) 54.66                      D) 54.71

**Determine whether the given function is positive or negative for values of t in the specified quadrant.**

12) Quadrant II,  $\cot t$  12) \_\_\_\_\_

- A) Positive                      B) Negative

**Solve the problem.**

13) The radius of a car wheel is 12 inches. How many revolutions per minute is the wheel making when the car is travelling at 25 mph. Round your answer to the nearest revolution. 13) \_\_\_\_\_

- A) 14 rpm                      B) 2017 rpm                      C) 3456 rpm                      D) 350 rpm

**Write each expression in factored form as an algebraic expression of a single trigonometric function.**

14)  $\sec^4 x + \sec^2 x \tan^2 x - 2 \tan^4 x$  14) \_\_\_\_\_

- A)  $\tan^2 x - 1$                       B)  $4 \sec^2 x$                       C)  $3 \sec^2 x - 2$                       D)  $\sec^2 x + 2$

**Use the fundamental identities to find the value of the trigonometric function.**

15) Find  $\csc \theta$  if  $\cot \theta = -\sqrt{15}$  and  $\cos \theta < 0$ . 15) \_\_\_\_\_

- A) -4                      B)  $\frac{1}{4}$                       C)  $-\frac{1}{4}$                       D) 4

**Suppose that  $\theta$  is in standard position and the given point is on the terminal side of  $\theta$ . Give the exact value of the indicated trig function for  $\theta$ .**

16)  $(-5, 12)$ ; find  $\sin \theta$ . 16) \_\_\_\_\_

- A)  $-\frac{12}{13}$                       B)  $\frac{5}{13}$                       C)  $\frac{12}{13}$                       D)  $-\frac{5}{13}$

**Find the measures of two angles, one positive and one negative, that are coterminal with the given angle.**

17)  $\frac{9\pi}{5}$  17) \_\_\_\_\_

- A)  $\frac{14\pi}{5}; -\frac{\pi}{5}$                       B)  $\frac{14\pi}{5}; -\frac{14\pi}{5}$                       C)  $\frac{\pi}{5}; -\frac{19\pi}{5}$                       D)  $\frac{19\pi}{5}; -\frac{\pi}{5}$

**Rewrite with only  $\sin x$  and  $\cos x$ .**

18)  $\cos 2x + \sin x$  18) \_\_\_\_\_

- A)  $1 - 2 \sin^2 x + \sin x$                       B)  $1 + 3 \sin x$   
 C)  $1 + 3 \sin^2 x$                       D)  $1 + 2 \sin^2 x + \sin x$

19) Find  $\sec \beta$ , if  $\sin \beta = -\frac{5}{10}$  and  $\tan \theta > 0$

19) \_\_\_\_\_

A)  $\frac{\sqrt{10}}{5}$

B)  $-\frac{5\sqrt{75}}{75}$

C)  $-\frac{\sqrt{75}}{10}$

D)  $-\frac{10\sqrt{75}}{75}$

20)  $\csc 0.2101 =$

20) \_\_\_\_\_

A) 0.2086

B) 0.9780

C) 1.0225

D) 4.7948

**Convert from degrees to radians. Use the value of  $\pi$  found on a calculator and round answers to four decimal places, as needed.**

21)  $216^\circ$

21) \_\_\_\_\_

A)  $\frac{3\pi}{5}$

B)  $\frac{12\pi}{5}$

C)  $\frac{7\pi}{10}$

D)  $\frac{6\pi}{5}$

**Assume that  $\theta$  is an acute angle in a right triangle satisfying the given conditions. Evaluate the indicated trigonometric function.**

22)  $\sin \theta = \frac{8}{9}$ ;  $\cot \theta$

22) \_\_\_\_\_

A)  $\frac{9}{\sqrt{17}}$

B)  $\frac{\sqrt{17}}{8}$

C)  $\frac{\sqrt{17}}{9}$

D)  $\frac{8}{\sqrt{17}}$

**Find an algebraic expression equivalent to the given expression.**

23)  $\sin(\operatorname{arcsec} u)$

23) \_\_\_\_\_

A)  $\sqrt{u^2 - 1}$

B)  $\frac{\sqrt{u^2 - 1}}{u}$

C)  $\frac{u\sqrt{u^2 + 1}}{u^2 + 1}$

D)  $\sqrt{u^2 + 1}$

**Write the expression as the sine, cosine, or tangent of an angle.**

24)  $\cos \frac{\pi}{2} \cos \frac{\pi}{7} + \sin \frac{\pi}{2} \sin \frac{\pi}{7}$

24) \_\_\_\_\_

A)  $\sin \frac{9\pi}{14}$

B)  $\cos \frac{5\pi}{14}$

C)  $\cos \frac{9\pi}{14}$

D)  $\sin \frac{5\pi}{14}$

**Find all solutions to the equation in the interval  $[0, 2\pi)$ .**

25)  $\sin 2x = -\sin x$

25) \_\_\_\_\_

A)  $0, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}$

B)  $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

C) No solution

D)  $\frac{\pi}{8}, \frac{9\pi}{8}$

**Find the exact value by using a half-angle identity.**

26)  $\cos\left(-\frac{\pi}{8}\right)$

26) \_\_\_\_\_

A)  $\frac{1}{2}\sqrt{1 - \sqrt{2}}$

B)  $\frac{1}{2}\sqrt{1 + \sqrt{2}}$

C)  $\frac{1}{2}\sqrt{2 + \sqrt{2}}$

D)  $\frac{1}{2}\sqrt{2 - \sqrt{2}}$

Write an equation for a sine curve that has the given amplitude and period, and which passes through the given point.

27) Amplitude 4, period  $\pi/4$ , point  $(1/3, 0)$

27) \_\_\_\_\_

A)  $y = 4 \sin \left( 4x - \frac{4}{3} \right)$

B)  $y = 4 \sin \left( 8x - \frac{\pi}{3} \right)$

C)  $y = 4 \sin \left( \frac{\pi}{4}x - \frac{\pi}{3} \right)$

D)  $y = 4 \sin \left( 8x - \frac{8}{3} \right)$

Solve the equation.

28) Solve  $\cot \theta = \sqrt{3}$  for  $\theta$ , where  $0^\circ \leq \theta \leq 90^\circ$

28) \_\_\_\_\_

A)  $60^\circ$

B)  $75^\circ$

C)  $45^\circ$

D)  $30^\circ$

Find the period of the function.

29)  $y = \sin 5x$

29) \_\_\_\_\_

A) 5

B)  $2\pi$

C) 1

D)  $\frac{2\pi}{5}$

Find the amplitude of the function.

30)  $y = -3 \sin x$

30) \_\_\_\_\_

A)  $2\pi$

B)  $-3\pi$

C)  $\frac{\pi}{3}$

D) 3

## Answer Key

Testname: PRECAL SPRING FINAL REVIEW AND TEST 2019 UNDERCLASSMEN

- 1) D
- 2) C
- 3) B
- 4) D
- 5) B
- 6) D
- 7) C
- 8) D
- 9) A
- 10) B
- 11) A
- 12) B
- 13) D
- 14) C
- 15) D
- 16) C
- 17) D
- 18) A
- 19) D
- 20) D
- 21) D
- 22) B
- 23) B
- 24) B
- 25) A
- 26) C
- 27) D
- 28) D
- 29) D
- 30) D