

Find the exact value of the composition.

1) $\csc\left(\sin^{-1}\left(\frac{3}{5}\right)\right)$

A) $\frac{4}{3}$

B) $\frac{5}{3}$

C) $\frac{3}{4}$

D) $\frac{3}{5}$

2) $\sin\left(2 \arccos\left(\frac{4}{5}\right)\right)$

A) $\frac{7}{25}$

B) $\frac{14}{25}$

C) $\frac{18}{25}$

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

Find all real numbers that satisfy the equation.

3) $2 \cos x + 1 = 0$

A) $x = \frac{\pi}{2} + 2n\pi$ or $x = \frac{3\pi}{2} + 2n\pi$

B) $x = \frac{2\pi}{3} + n\pi$ or $x = \frac{4\pi}{3} + n\pi$

C) $x = \frac{\pi}{2} + n\pi$ or $x = \frac{3\pi}{2} + n\pi$

D) $x = \frac{2\pi}{3} + 2n\pi$ or $x = \frac{4\pi}{3} + 2n\pi$

Solve the equation for $0 \leq t < 2\pi$. Approximate the solution to four decimal places.

4) $\cos t = -0.30$

A) 1.9284, 4.3548

B) 1.8235, 4.4597

C) 1.8755, 4.4077

D) 1.9823, 4.3009

Solve the equation for x.

5) $y = 8 \cos 3x$

A) $x = 8 \arccos \frac{y}{3}$

B) $x = \frac{1}{3} \arccos \frac{y}{8}$

C) $x = 3 \arccos \frac{y}{8}$

D) $x = \frac{1}{8} \arccos \frac{y}{3}$

Find all real numbers that satisfy the equation.

6) $\sin 2x = -\frac{1}{2}$

A) $\left\{x \mid x = \frac{\pi}{12} + k\pi \text{ or } x = \frac{5\pi}{12} + k\pi\right\}$

B) $\left\{x \mid x = \frac{7\pi}{12} + k\pi\right\}$

C) $\left\{x \mid x = \frac{7\pi}{12} + 2k\pi \text{ or } x = \frac{11\pi}{12} + 2k\pi\right\}$

D) $\left\{x \mid x = \frac{7\pi}{12} + k\pi \text{ or } x = \frac{11\pi}{12} + k\pi\right\}$

Find all real numbers in $[0, 2\pi]$ that satisfy the equation.

7) $\sqrt{2} \cos(2x) = 1$

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

B) $\frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8}$

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

D) no solution

Find all real numbers in the interval $[0, 2\pi)$ that satisfy the equation.

8) $\cos^2 x + 2 \cos x + 1 = 0$

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

B) $\{\pi\}$

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

D) $\{2\pi\}$

9) $\sin^2 x + \sin x = 0$

A) $\left\{0, \pi, \frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

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

C) $\left\{0, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$

D) $\left\{0, \pi, \frac{3\pi}{2}\right\}$

Solve the triangle with the given parts.

10) $\alpha = 42.5^\circ$, $\beta = 35.2^\circ$, $a = 18.0$

A) $\gamma = 103.3^\circ$, $b = 0.0$, $c = 15.3$

B) $\gamma = 180.0^\circ$, $b = 15.3$, $c = 0.0$

C) $\gamma = 180.0^\circ$, $b = 0.0$, $c = 15.3$

D) $\gamma = 103.3^\circ$, $b = 15.3$, $c = 0.0$

Determine the number of triangles with the given parts.

11) $a = 34$, $b = 69$, $\alpha = 70^\circ$

A) 2

B) 0

C) 3

D) 1

12) $a = 35$, $b = 52$, $\alpha = 21^\circ$

A) 0

B) 3

C) 1

D) 2

Solve the triangle. If there is more than one triangle with the given parts, give both solutions.

13) $\beta = 16.86^\circ$

$b = 10.00$

$a = 11.49$

A) $\alpha = 160.53^\circ$, $\gamma = 2.61^\circ$, $c = 1.57$

B) $\alpha = 19.47^\circ$, $\gamma = 143.67^\circ$, $c = 20.43$;

$\alpha' = 160.53^\circ$, $\gamma' = 2.61^\circ$, $c' = 1.57$

C) No solution

D) $\alpha = 19.47^\circ$, $\gamma = 143.67^\circ$, $c = 20.43$

Solve the triangle with the given information.

14) $\gamma = 123.5^\circ$

$a = 4.80$

$b = 9.41$

A) $c = 15.6$, $\alpha = 20.4^\circ$, $\beta = 36.1^\circ$

B) $c = 12.7$, $\alpha = 18.4^\circ$, $\beta = 38.1^\circ$

C) $c = 18.5$, $\alpha = 16.4^\circ$, $\beta = 40.1^\circ$

D) No solution

Find the area of triangle ABC.

15) $\alpha = 36.0^\circ$

$b = 12.0$

$c = 5.3$

A) 18.7

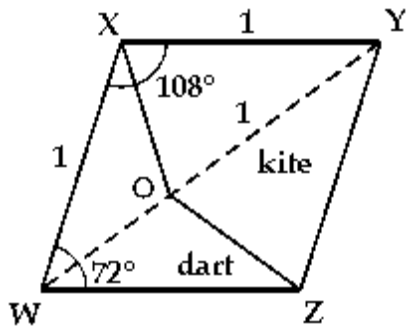
B) 27.7

C) 25.7

D) 16.7

Solve the problem.

- 16) Penrose tiles are formed from a rhombus $WXYZ$ with sides of length 1 and interior angles 72° and 108° . (Refer to the illustration.) A point O is chosen on the diagonal 1 unit from Y . Line segments OX and OZ are drawn to the other vertices. The two resulting tiles are called a kite (figure $OXYZ$) and a dart (figure $OXWZ$). Find the area of the kite tile and the dart tile, correct to the nearest 0.01.



Find the area of the triangle using Heron's formula. Round to the nearest unit.

- 17) $a = 62$
 $b = 88$
 $c = 83.6$
- A) 3174 B) 2476 C) 2474 D) 3194

Solve the problem.

- 18) A stained glass window is composed of 20 triangular sections, each with sides 4, 9, and 6 in. Find the total area of the window (to the nearest square inch).
- A) 3835 in.^2 B) 191 in.^2 C) 10 in.^2 D) 62 in.^2

Answer Key

Testname: TRIG REVIEW 3

- 1) B
- 2) D
- 3) D
- 4) C
- 5) B
- 6) D
- 7) B
- 8) B
- 9) D
- 10) B
- 11) B
- 12) D
- 13) B
- 14) B
- 15) A
- 16) 0.59 sq. units; 0.36 sq. units
- 17) C
- 18) B