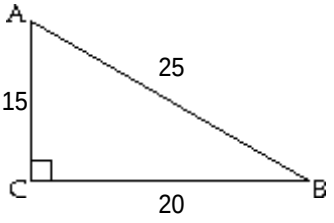
mid3 pre

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate the function requested. Write your answer as a fraction in lowest terms.

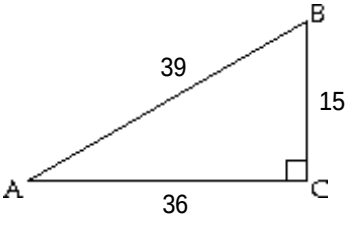
1) 1) _____



Find sin A.

A) $\sin A = \frac{4}{3}$ B) $\sin A = \frac{5}{4}$ C) $\sin A = \frac{3}{5}$ D) $\sin A = \frac{4}{5}$

2) 2) _____



Find tan A.

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

Without using a calculator, give the exact trigonometric function value with rational denominator.

3) cos 30° 3) _____

A) $\frac{1}{2}$ B) $\sqrt{3}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{2}}{2}$

4) cot 45° 4) _____

A) 1 B) $\frac{1}{2}$ C) $\sqrt{2}$ D) $\frac{2\sqrt{3}}{3}$

5) sec 30° 5) _____

A) 1 B) $\sqrt{2}$ C) $\frac{2\sqrt{3}}{3}$ D) $\frac{1}{2}$

Find the exact value of the expression.

6) csc 60° 6) _____

A) 2 B) $\sqrt{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{2\sqrt{3}}{3}$

7) csc 330° 7) _____

A) -2 B) $\frac{2\sqrt{3}}{3}$ C) 2 D) $-\frac{2\sqrt{3}}{3}$

8) sin (-240°) 8) _____

A) -1 B) $\frac{\sqrt{3}}{2}$ C) $\frac{1}{2}$ D) $\frac{\sqrt{2}}{2}$

Find all values of θ, if θ is in the interval [0, 360°) and has the given function value.

9) $\cos\theta = \frac{1}{2}$ 9) _____

A) 60° and 120° B) 60° and 300° C) 150° and 210° D) 210° and 330°

10) $\cos\theta = \frac{\sqrt{3}}{2}$ 10) _____

A) 45° and 225° B) 135° and 225° C) 30° and 330° D) 225° and 315°

11) $\sin\theta = -\frac{\sqrt{2}}{2}$ 11) _____

A) 135° and 225° B) 45° and 225° C) 45° and 315° D) 225° and 315°

12) $\tan\theta = 1$ 12) _____

A) 135° and 225° B) 45° and 315° C) 45° and 225° D) 225° and 315°

13) $\cot\theta = 1$ 13) _____

A) 225° and 315° B) 135° and 225° C) 45° and 225° D) 45° and 315°

Convert the degree measure to radians. Leave answer as a multiple of π.

14) 36° 14) _____

A) $\frac{\pi}{7}$ B) $\frac{\pi}{5}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{6}$

Convert the radian measure to degrees. Round to the nearest hundredth if necessary.

15) $-\frac{\pi}{5}$ 15) _____

A) -0.63° B) $-\frac{\pi}{5}°$ C) -36° D) $-36\pi°$

Find the exact circular function value.

16) $\cos \frac{-2\pi}{3}$ 16) _____

A) $-\frac{1}{2}$ B) undefined C) $\frac{\sqrt{3}}{2}$ D) $-\frac{\sqrt{3}}{2}$

17) $\sin \frac{3\pi}{4}$ 17) _____

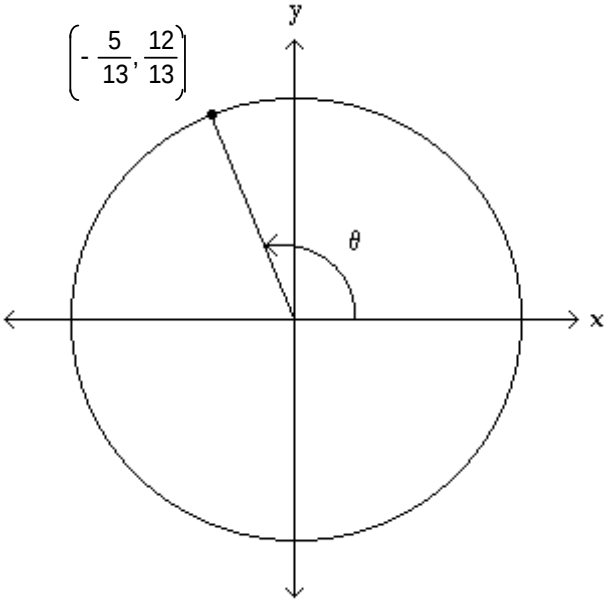
A) $\frac{\sqrt{2}}{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $-\frac{1}{2}$ D) $\frac{1}{2}$

18) $\tan \frac{-3\pi}{4}$ 18) _____

A) $\sqrt{3}$ B) -1 C) 1 D) $\frac{\sqrt{3}}{3}$

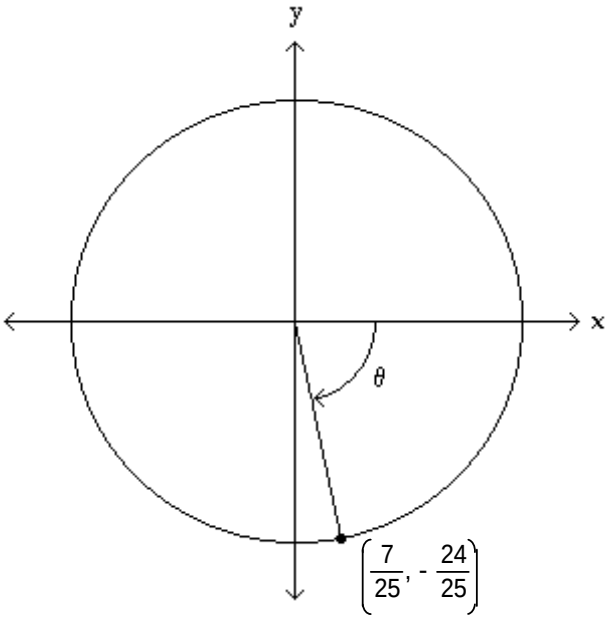
The figure shows an angle θ in standard position with its terminal side intersecting the unit circle. Evaluate the indicated circular function value of θ.

19) Find $\cot \theta$. 19) _____



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

20) Find csc θ. 20) _____

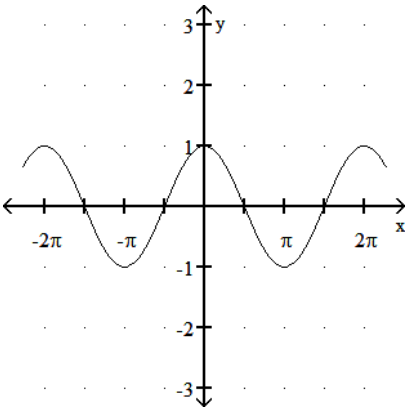


A) $-\frac{25}{7}$ B) $\frac{25}{24}$ C) $-\frac{25}{24}$ D) $\frac{24}{7}$

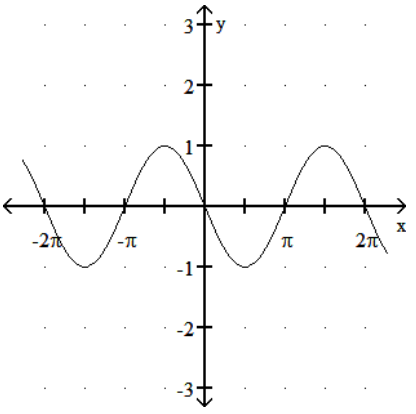
Match the function with its graph.

21) 1) $y = \sin x$ 2) $y = \cos x$
3) $y = -\sin x$ 4) $y = -\cos x$ 21) _____

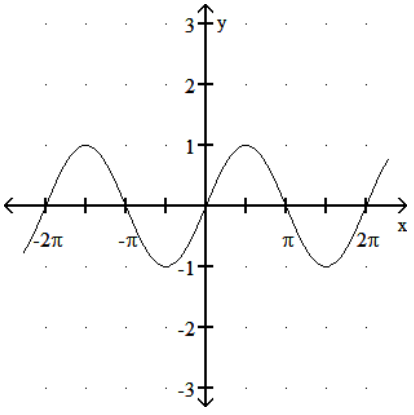
A)



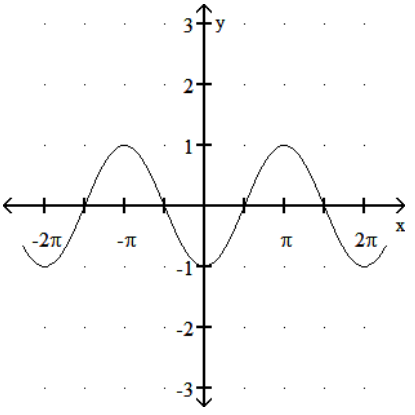
B)



C)



D)



A) 1A, 2B, 3C, 4D B) 1C, 2A, 3B, 4D C) 1B, 2D, 3C, 4A D) 1A, 2D, 3C, 4B

Give the amplitude or period as requested.

22) Amplitude of $y = -5 \sin x$ 22) _____

A) 5 B) -5π C) 2π D) $\frac{\pi}{5}$

23) Period of $y = -5 \cos x$ 23) _____

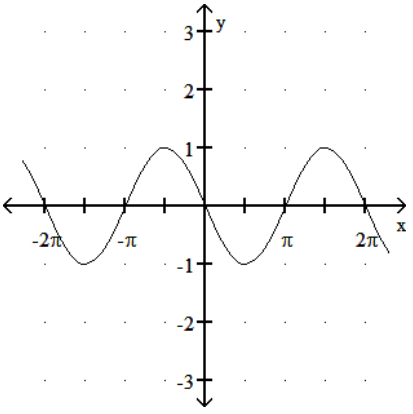
A) $\frac{\pi}{5}$ B) 5 C) π D) 2π

Match the function with its graph.

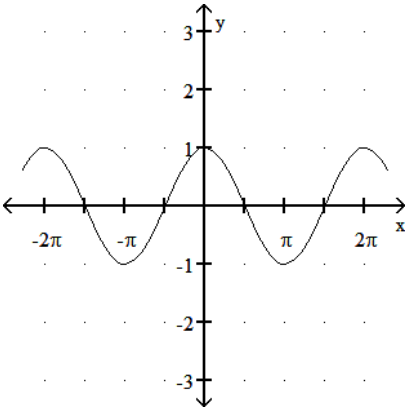
24) 1) $y = \sin\left(x - \frac{\pi}{2}\right)$ 2) $y = \cos\left(x + \frac{\pi}{2}\right)$ 24) _____

3) $y = \sin\left(x + \frac{\pi}{2}\right)$ 4) $y = \cos\left(x - \frac{\pi}{2}\right)$

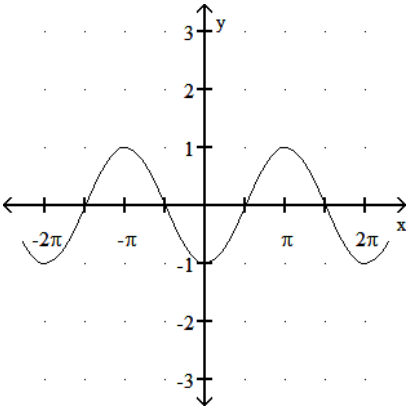
A)



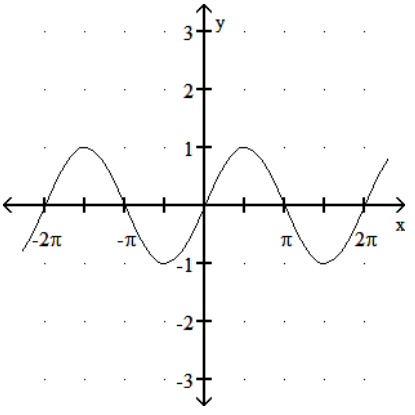
B)



C)



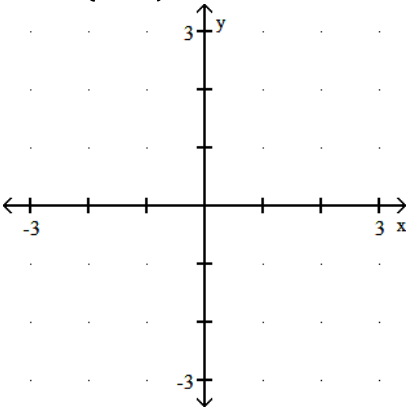
D)



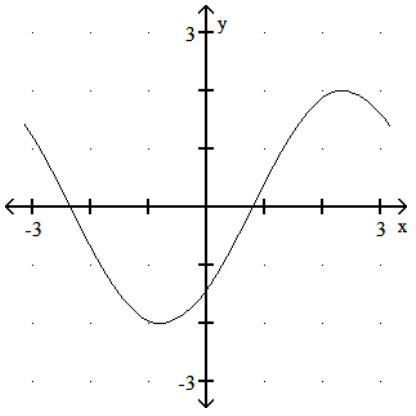
A) 1A, 2D, 3C, 4B B) 1C, 2A, 3B, 4D C) 1B, 2D, 3C, 4A D) 1A, 2B, 3C, 4D

Graph the function.

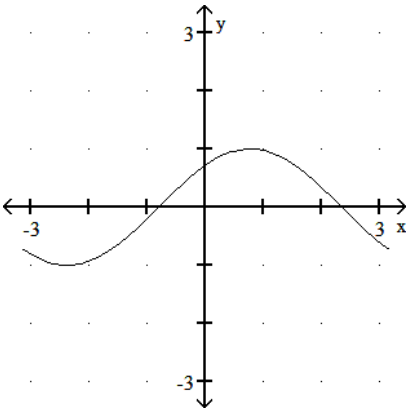
25) $y = \sin\left(x + \frac{\pi}{4}\right)$ 25) _____



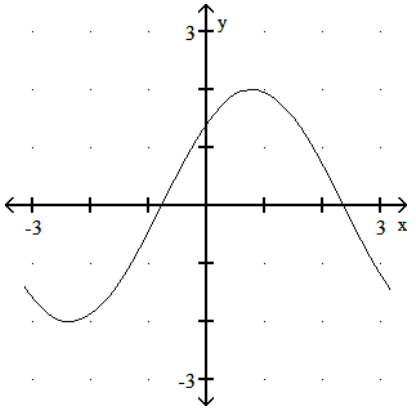
A)



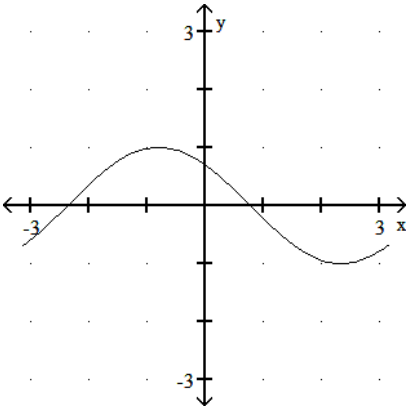
B)



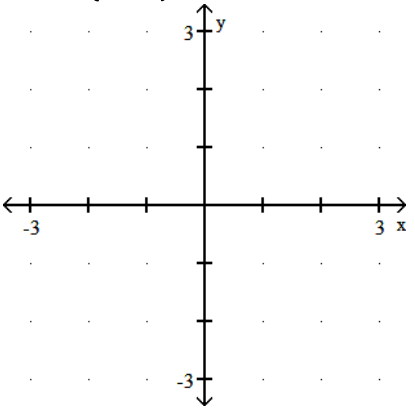
C)



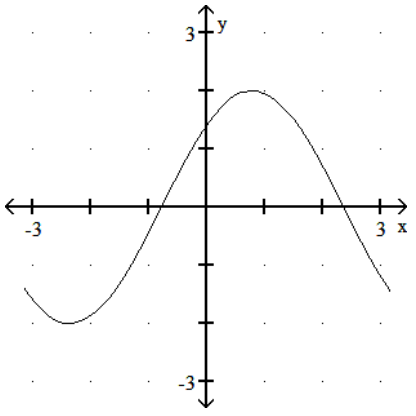
D)



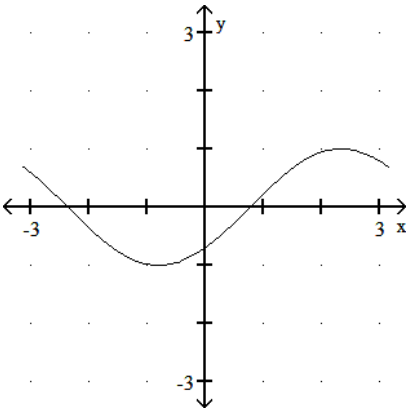
26) $y = \cos\left(x - \frac{\pi}{4}\right)$ 26) _____



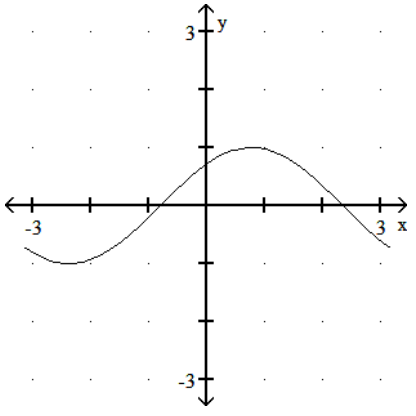
A)



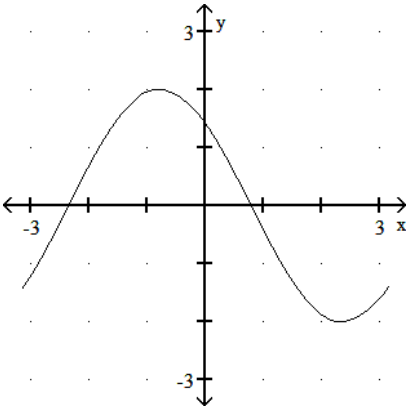
B)



C)

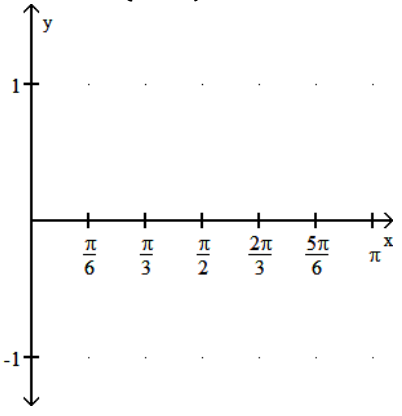


D)

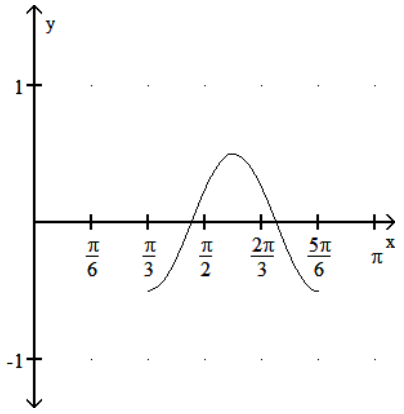


Graph the function over a one-period interval.

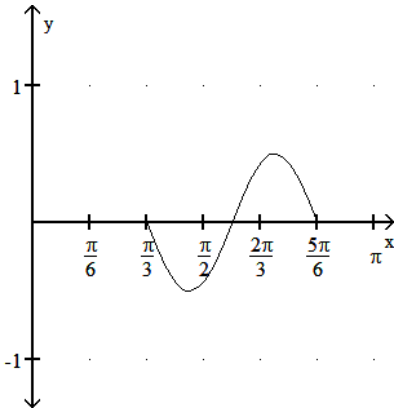
27) $y = \frac{1}{2} \cos 4\left(x - \frac{\pi}{3}\right)$ 27) _____



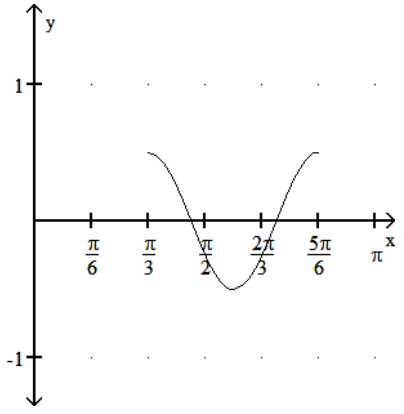
A)



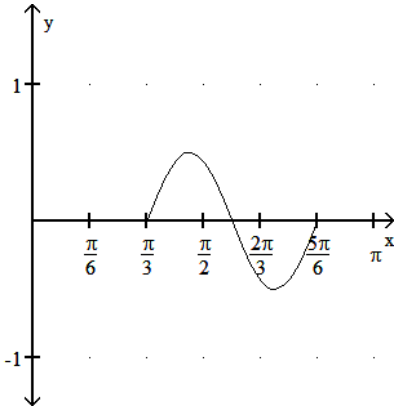
B)



C)



D)



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

28) Find cot θ if csc $\theta = \frac{\sqrt{26}}{5}$ and θ is in quadrant I. 28) _____

A) $\frac{\sqrt{26}}{26}$ B) 5 C) $\frac{1}{5}$ D) $\sqrt{26}$

29) Find sec θ if tan $\theta = \frac{3}{4}$ and θ is in quadrant I. 29) _____

A) $\frac{5}{4}$ B) $-\frac{\sqrt{7}}{9}$ C) $\frac{3\sqrt{7}}{7}$ D) $-\frac{3}{2}$

30) Find cos θ if sin $\theta = -\frac{5}{13}$ and θ is in quadrant III. 30) _____

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

Complete the sentence so the result is an identity. Let x be any real number.

31) ___ + $\sin^2 x = 1$ 31) _____

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

32) ___ - 1 = $\tan^2 x$ 32) _____

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

33) ___ = $\frac{1}{\sin x}$ 33) _____

A) tan x B) csc x C) cot x D) sec x

Write the expression in terms of sine and cosine, and simplify so that no quotients appear in the final expression.

34) csc x(sin x + cos x) 34) _____

A) -2 $\tan^2 x$ B) sec x csc x C) sin x tan x D) 1 + cot x

35) $\frac{1 + \tan^2 x}{\sec x}$ 35) _____

A) 1 B) sec x C) -sec x D) csc x

Use the fundamental identities to simplify the expression.

36) $\frac{1 + \tan^2 x}{\sec x}$ 36) _____

A) sec x B) -sec x C) csc x D) 1

37) $\sin^2 x(\cot^2 x + 1)$ 37) _____

A) $\cos^2 x + 1$ B) $\tan^2 x$ C) -1 D) 1

Find the exact value of the real number y.

38) $y = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$ 38) _____

A) $\frac{\pi}{3}$ B) $\frac{3\pi}{4}$ C) $\frac{\pi}{4}$ D) $\frac{2\pi}{3}$

39) $y = \arcsin\left(\frac{1}{2}\right)$ 39) _____

A) π B) $\frac{7\pi}{6}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{3}$

Give the degree measure of θ.

40) $\theta = \sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$ 40) _____

A) 135° B) 60° C) 45° D) 120°

41) θ = arccos (0) 41) _____

A) 0° B) 90° C) 45° D) 180°

Solve the equation for exact solutions over the interval $[0, 2\pi)$.

42) $\sin^2 x + \sin x = 0$ 42) _____

A) $\left\{0, \pi, \frac{4\pi}{3}, \frac{5\pi}{3}\right\}$ B) $\left\{0, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$ C) $\left\{0, \pi, \frac{3\pi}{2}\right\}$ D) $\left\{0, \pi, \frac{\pi}{3}, \frac{2\pi}{3}\right\}$