

Pre-Calculus 12: *Trig Angles, Ratios, Identities Quiz*

Part I: Multiple Choice and Numerical Response

1. Which pair of angles are co-terminal with $-\frac{4\pi}{3}$?

A. $\frac{\pi}{3}$ and $\frac{2\pi}{3}$

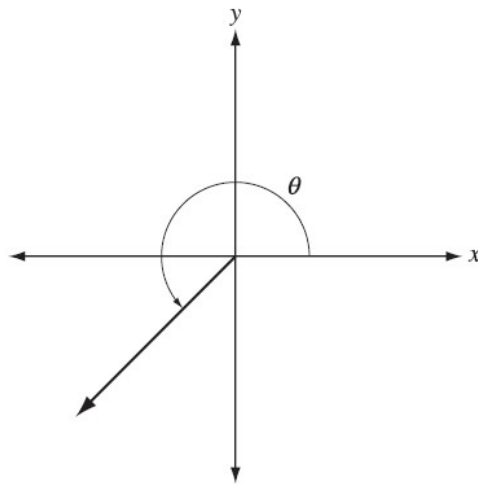
B. $\frac{2\pi}{3}$ and $\frac{8\pi}{3}$

C. $\frac{4\pi}{3}$ and $\frac{8\pi}{3}$

D. $-\frac{10\pi}{3}$ and $-\frac{13\pi}{3}$

Use the following information to answer the next question.

An angle, θ , in standard position, is shown below.



2. The best estimate of the rotation angle θ is

A. 1.25 radians

B. 3.12 radians

C. 4.01 radians

D. 5.38 radians

3. The solutions to the equation $\sin \theta = -\frac{\sqrt{3}}{2}$, $-2\pi < \theta < 0$ are

A. $-\frac{4\pi}{3}, -\frac{5\pi}{3}$

B. $-\frac{\pi}{3}, -\frac{2\pi}{3}$

C. $-\frac{\pi}{6}, -\frac{5\pi}{6}$

D. $-\frac{7\pi}{6}, -\frac{11\pi}{6}$

Use the following information to answer the next question.

Point A (x, y) is the intersection point of the unit circle and the terminal arm of 145° in standard position.

4. The coordinates of Point A, to the nearest hundredth, are

- A. $(-0.57, 0.82)$
- B. $(0.57, -0.82)$
- C. $(-0.82, 0.57)$
- D. $(0.82, -0.57)$

5. The expression equivalent to $\frac{\sin^2 x}{1 - \cos x}$ is

- A. $1 + \cos x$
- B. $\cos x$
- C. $1 - \cos x$
- D. $-\cos x$

6. If $\cos x = \frac{1}{12}$ and $\sin x > 0$, find $\tan 2x$

A. $\frac{-\sqrt{143}}{142}$

B. $\frac{\sqrt{143}}{142}$

C. $\frac{\sqrt{143}}{71}$

D. $\frac{-\sqrt{143}}{71}$

7. The expression $\frac{\cot x + \csc x}{\sec x + 1}$ where $\sec x \neq -1$ is equivalent to

- A. $\sin x$
- B. $\tan x$
- C. $\csc x$
- D. $\cot x$

8. The expression $3\cos^2(8x) - 3\sin^2(8x)$ is equal to

- A. $\cos(64x)$
- B. $3\cos(16x)$
- C. $3\cos(16x^3)$
- D. $3\cos(4x)$

9. The number of solutions to the equation $2\cos^2 x + 5\cos x - 3 = 0$, $-\pi \leq x \leq \pi$ is

- A. 1
- B. 2
- C. 3
- D. 4

Numeric Response #1:

When the exact value of $\sin 165^\circ$ is determined it can be written in the form $\frac{\sqrt{a} - \sqrt{b}}{c}$ the values of a , b , and c respectively are ____, ____, ____.

Numeric Response #2:

A student uses the angle $x = \frac{\pi}{6}$ to verify the identity $\frac{\sin^2 x}{\sec x + 1} = \frac{1 - \cos x}{\sec x}$. Using $x = \frac{\pi}{6}$, the exact value of each side of the identity can be written in the simplified form $\frac{a\sqrt{b} - c}{d}$. The values of a , b , c , and d respectively are ____, ____, ____, ____.

Written Response:

1. Given $\sin x = \frac{3}{5}$, $0 \leq x \leq \frac{\pi}{2}$ and $\sec y = -\frac{13}{5}$, $\frac{\pi}{2} \leq y \leq \pi$, **determine** the exact value of $\cos(x + y)$.
(3 marks)

2. **Solve** $\sin 2x - \sin x = 0$ *algebraically* for the domain $-\pi \leq \theta \leq \pi$. (3 marks)