

Test #8: Unit #8 – Introduction to Trigonometric Functions

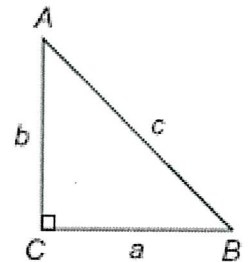
Name _____ Date _____ Period _____

Multiple Choice	× (9/7)	
Free Response	× 1	
Total Score out of 36		

MULTIPLE CHOICE – Calculator Permitted

1. If $a = 18$ and the measure of angle B is 25° , what is the value of c ?

- A. 38.6
- B. 16.3
- C. 42.6
- D. 19.9
- E. 7.6



2. Which of the following angles is co-terminal with the angle $\theta = -\frac{7\pi}{6}$.

- A. $\frac{17\pi}{6}$
- B. $\frac{13\pi}{6}$
- C. $\frac{19\pi}{6}$
- D. $\frac{11\pi}{6}$
- E. $\frac{7\pi}{6}$

3. Which of the following angles in degrees represents θ' , the reference angle, for the angle, θ , which measures $\frac{3\pi}{5}$ radians?

- A. 108°
- B. 18°
- C. 48°
- D. 72°
- E. 128°

4. Which of the following angles would terminate in Quadrant II?

I. $\frac{13\pi}{15}$

II. $\frac{7\pi}{5}$

III. -3π

A. I and II only

B. I only

C. II only

D. I and III only

E. I, II, and III

5. Which of the following statements is/are true about the angle θ ?

I. If θ is such that $90^\circ < \theta < 180^\circ$, then the reference angle would equal $(180^\circ - \theta)$.

II. If $\sin \theta > 0$, then the angle θ can terminate in either Quadrant I or Quadrant IV.

III. If $\cos \theta < 0$ and $\tan \theta < 0$, then the angle θ will terminate in Quadrant II.

A. I only

B. II only

C. III only

D. I and III only

E. II and III only

6. Which of the following angles in radian measure is/are less than 225° ?

I. $\frac{3\pi}{5}$

II. $\frac{7\pi}{5}$

III. $\frac{5\pi}{3}$

A. II only

B. I and II only

C. III only

D. II and III only

E. I only

7. Find two values of θ that satisfy $\sec \theta = 2.5593$ on the interval $[0^\circ, 360^\circ)$.

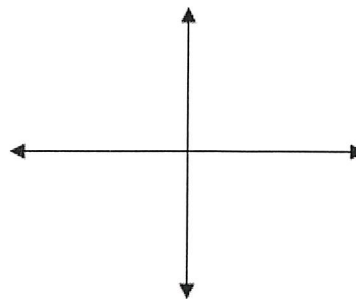
- A. 23° and 157°
- B. 67° and 293°
- C. 157° and 293°
- D. 23° and 203°
- E. 67° and 247°

FREE RESPONSE

Consider the equation $\csc \theta = -2.1464$. Answer the following questions if $0^\circ \leq \theta < 360^\circ$.

a. Without solving the equation for θ , in which quadrant(s) could the angle θ possibly terminate? Justify your answer.

b. Using your calculator, find a negative value of θ . Show your work. Then, draw this negative angle in standard position.



c. On the interval $[0, 360^\circ)$, what is/are the possible value(s) of θ . Make sure that you clearly show or explain the analysis that leads to your answer(s).

d. Suppose an angle α is such that $0 < \alpha < \frac{\pi}{2}$. Explain why the values of $\sin \alpha$ and $\sin(\pi - \alpha)$ are equivalent. Explain your reasoning.

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MULTIPLE CHOICE – Calculator NOT Permitted

8. Using the coordinates on the unit circle, find the exact value of $\tan \frac{2\pi}{3}$?

A. $-\frac{\sqrt{3}}{3}$

B. $\sqrt{3}$

C. $\frac{\sqrt{3}}{3}$

D. $-\sqrt{3}$

E. -1

9. Using the coordinates on the unit circle, find the exact value of $\cot \left(-\frac{3\pi}{2}\right)$?

A. 1

B. -1

C. 0

D. $\frac{\sqrt{2}}{2}$

E. undefined

10. Which of the following pairs of trigonometric ratios are equivalent.

I. $\tan \frac{\pi}{4}$ $\tan \frac{5\pi}{4}$

II. $\tan \frac{\pi}{6}$ $\tan \frac{4\pi}{3}$

III. $\tan \frac{\pi}{6}$ $\tan \frac{7\pi}{6}$

- A. II and III only
- B. I and III only
- C. III only
- D. I only
- E. I, II, and III only

11. In an oblique triangle, $\triangle ABC$, it is known that $a = 3$, $b = 5$, and $c = 7$. Which of the following equations could be solved to determine $m\angle A$?

A. $3^2 = 7^2 + 5^2 - 2(7)(5)\cos A$

B. $5^2 = 7^2 + 3^2 - 2(7)(3)\sin A$

C. $7^2 = 3^2 + 5^2 - 2(3)(5)\cos A$

D. $3^2 = 5^2 + 7^2 - 2(5)(7)\sin A$

E. $5^2 = 7^2 + 3^2 - 2(7)(3)\cos A$

12. Which of the following angles, θ , is/are such that $\sin\theta = -\frac{1}{2}$.

I. $\theta = \frac{7\pi}{6}$

II. $\theta = \frac{\pi}{3}$

III. $\theta = -\frac{\pi}{6}$

- A. I and III only
- B. II only
- C. II and III only
- D. III only
- E. I, II, and III

13. Which of the following statement(s) is/are true about the six trigonometric ratios?

- I. In quadrant II, the sine and secant ratios are positive.
- II. In quadrant IV, the tangent and cotangent ratios are negative.
- III. Sine and Cosine are the only trigonometric ratios that are positive in quadrant I.

- A. I and II only
- B. I only
- C. I and III only
- D. II only
- E. I, II, and III

14. An angle θ is such that $\sec \theta < 0$ and $\tan \theta > 0$, in which quadrant must the terminal side of θ lie?

- A. Quadrant I
- B. Quadrant II
- C. Quadrant III
- D. Quadrant IV
- E. The terminal side of θ lies on an axis, not in a Quadrant.

FREE RESPONSE

The angle θ is such that $\csc \theta = 2$ and the angle α is such that the terminal side of α passes through the point $(-2, 7)$. Answer the following questions about θ and α .

a. In which quadrant(s) could angle θ terminate? Explain your reasoning.

b. If $\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$, what is the value of θ ? Explain your reasoning.

c. Find one positive and one negative co-terminal angle with the angle θ ? Show your work.

d. Find the values of $\sec \alpha$ and $\tan \alpha$. Show your work, including the reference triangle for α .