

I. **MULTIPLE CHOICE:** WRITE IN THE BLANK SPACE THE LETTER CORRESPONDING TO THE CORRECT RESPONSE. PLEASE USE ONLY CAPITAL LETTERS.

1. _____ GIVEN AN ANGLE OF $\theta = 100^\circ$, WHAT IS THE ASSOCIATED REFERENCE ANGLE?
A. $\theta_R = 10^\circ$ B. $\theta_R = 260^\circ$ C. $\theta_R = 80^\circ$
D. NOT ENOUGH INFORMATION IS GIVEN E. NONE OF THESE
2. _____ IF THE SIGNUM OF $\cot(\theta)$ IS NEGATIVE, WHAT IS THE SIGNUM OF $\tan(\theta)$?
A. POSITIVE B. NEGATIVE C. ZERO
D. NOT ENOUGH INFORMATION IS GIVEN E. NONE OF THESE.
3. _____ WHAT IS THE QUADRANT III MEMBER OF THE REFERENCE ANGLE FAMILY IF $\theta_R = 50^\circ$?
A. $\theta = 50^\circ$ B. $\theta = 130^\circ$ C. $\theta = 310^\circ$
D. NOT ENOUGH INFORMATION IS GIVEN E. NONE OF THESE
4. _____ IN WHAT QUADRANT DOES θ LIE IF $\tan(\theta) > 0$ AND $\sin(\theta) < 0$?
A. QI B. QII C. QIII D. QIII E. NONE OF THESE
5. _____ WHICH OF THE FOLLOWING CONTAINS NO ERRORS?
A. $\csc(\theta) = \frac{r}{x}$ and $\tan(\theta) = \frac{y}{x}$ B. $\csc(\theta) = \frac{r}{y}$ and $\tan(\theta) = \frac{y}{x}$
C. $\sin(\theta) = \frac{r}{x}$ and $\tan(\theta) = \frac{y}{x}$ D. $\sin(\theta) = \frac{y}{r}$ and $\tan(\theta) = \frac{x}{y}$
E. NONE OF THESE
6. _____ WHEN SOLVING THE EQUATION $\sin(\theta) = \frac{\sqrt{3}}{2}$ WHAT IS THE RESULT OF THE QUADRANT CHECK?
A. QI & QIII B. QI & QIII C. QII & QIII D. QIII & QIII E. NONE OF THESE
7. _____ WHAT IS THE VALUE OF $\sin(\theta)$ IF THE TERMINAL SIDE OF θ PASSES THROUGH THE POINT $(3, -5)$?
A. $\frac{\sqrt{34}}{-5}$ B. $\frac{\sqrt{34}}{3}$ C. $\frac{3}{\sqrt{34}}$
D. NOT ENOUGH INFORMATION IS GIVEN E. NONE OF THESE
8. _____ WHEN SOLVING THE EQUATION $5\sin(\theta) - 10 = -13$ WHAT IS THE RESULT OF THE QUADRANT CHECK?
A. QI & QII B. QI & QIII C. QII & QIII D. QIII & QIII E. NONE OF THESE
9. _____ WHAT IS THE REFERENCE ANGLE FOR $\theta = 100^\circ$?
A. $\theta_R = 10^\circ$ B. $\theta_R = 90^\circ$ C. $\theta_R = 190^\circ$ D. $\theta_R = 80^\circ$ E. NONE OF THESE

* * * * *

10. IF THE TERMINAL SIDE OF θ PASSES THROUGH THE POINT $(-3, 4)$, FIND THE VALUES OF $\sin(\theta)$, $\cos(\theta)$, AND $\tan(\theta)$

11. IN $\triangle ABC$, YOU ARE GIVEN $\angle A = 26^\circ$, $\angle C = 90^\circ$, AND SIDE $b = 80$. FIND THE LENGTH OF THE HYPOTENUSE. ROUND YOUR ANSWER TO THE NEAREST **WHOLE NUMBER**.

12. KELLY IS STANDING 54 FEET FROM THE BASE OF A VERTICAL CLIFF. AT THE TOP OF THE CLIFF A RABBIT IS STANDING. THE RABBIT'S ANGLE OF DEPRESSION TO KELLEY IS 72° . HOW HIGH IS THE RABBIT ABOVE THE BOTTOM OF THE CLIFF? ROUND YOUR ANSWER TO TWO DECIMAL PLACES

13. SOLVE THE TRIANGLE USING THE GIVEN INFORMATION. ROUND ALL VALUES TO ONE DECIMAL PLACE.

GIVEN: $\angle A = 54^\circ$, $\angle C = 90^\circ$, AND SIDE $b = 125$.

14. SOLVE THE TRIANGLE USING THE GIVEN INFORMATION. ROUND ALL **LENGTHS** TO ONE DECIMAL PLACE.

GIVEN: $\angle A = 62^\circ$, $\angle C = 90^\circ$, AND SIDE $c = 130$.

SOLVE EACH EQUATION IN THE INTERVAL $0^\circ \leq \theta < 360^\circ$

15. $5\sin(\theta) - 10 = -13$

16. $\cos(\theta) = -\frac{1}{2}$

17. $\csc(\theta) = \frac{2}{\sqrt{2}}$

18. $2\tan(\theta) + 6 = 22$

19. A BIRD AT THE TOP OF A VERTICAL TREE HAS AN ANGLE OF DEPRESSION TO A WORM ON THE GROUND OF 71.6° . IF THE WORM IS 37 FEET AWAY FROM THE BASE OF THE TREE, WHAT IS THE DISTANCE BETWEEN THE BIRD AND THE WORM?

20. A HOT AIR BALLOON IS POSITIONED DIRECTLY ABOVE A COW. A FARMER IS STANDING 28.6 FEET AWAY FROM THE COW. IF THE FARMER'S ANGLE OF ELEVATION TO THE BALLOON IS 83.1° HOW HIGH IS THE BALLOON ABOVE THE COW.