

1. Which of the following is equivalent to  $\sin x \cos y$ ?

$$\frac{1}{2}[\sin(x + y) + \sin(x - y)]$$

2. Solve  $2 \cos x - 1 = 0, 0 \leq x < 2\pi$

$$\left\{ \frac{\pi}{3}, \frac{5\pi}{3} \right\}$$

3. Solve  $-2 \cos^2 \theta - 3 \sin \theta + 3 = 0, 0 \leq \theta < 2\pi$

$$\left\{ \frac{\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6} \right\}$$

4. If  $\cos 6\pi \cos \pi = \frac{1}{2} [\cos k + \cos 3\pi]$ , then what is the value of  $k$ ?

$$9\pi$$

5. Solve  $2 \cot \theta \csc \theta = \sqrt{3}, 0 \leq \theta < 2\pi$

$$\left\{ \frac{\pi}{6}, \frac{11\pi}{6} \right\}$$

6. Which of the following expressions is equivalent to  $\frac{1}{2}[\cos 9\pi - \cos 5\pi]$ ?
- $\sin 7\pi \sin 2\pi$

- a.  $\sin \frac{9\pi}{2} \sin \frac{5\pi}{2}$
- b.  $\sin 9\pi \sin 5\pi$
- c.  $\sin 7\pi \sin 2\pi$
- d.  $\sin 4\pi \sin 14\pi$

7. Solve  $-2 \sin^2 \theta - 2 \cos \theta - \sqrt{3} \cos \theta \sqrt{3} + 2 = 0, 0 \leq \theta < 2\pi$

$$\left\{ 0, \frac{\pi}{6}, \frac{11\pi}{6} \right\}$$

8. Solve  $\sin 2x - \sqrt{2} \sin x = 0, 0 \leq \theta < 2\pi$

$$\left\{ 0, \pi, \frac{\pi}{4}, \frac{7\pi}{4} \right\}$$

9. If  $[(5m + \sin 3m)] = 2 \sin k \cos m$ , then what is the value of  $k$ ?

$$4m \quad \mathbf{4m}$$

10. Which of the following statements is TRUE about the cosecant of an acute angle in a right triangle?

**Its value is greater than 1.**

11. The sine of an angle is never greater than 0

**TRUE**

12. The sum of the measures of the two acute angles in a right triangle is always equal to 90.

**TRUE**

13. The tangent of an angle is never greater than

**FALSE**

14. In which of the following cases is the Law of Sines always applicable?

**SAA**

15. A triangle can be solved given the measures of all of its angles

**TRUE**

16. Which of the following trigonometric ratios do not involve the adjacent leg?

**SINE**

17. Which of the following fractions is equal to the cosecant of an angle?

**hypotenuse/opposite**

18. The ratio of the hypotenuse to the adjacent leg is called the secant.

**TRUE**

19. What trigonometric function is equal to the ratio of the adjacent leg to the opposite leg?

**COTANGENT**

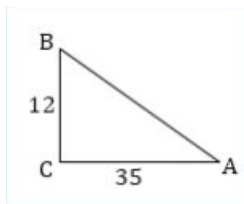
20. Which of the following is an identity?

$$\sin C - \sin D = 2 \cos \frac{C+D}{2} \sin \frac{C-D}{2}$$

21. If  $\cot \theta + 1 = 0$  and  $\theta$  is in *QIII*, then  $\theta = \frac{3\pi}{4}$

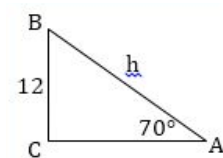
**TRUE**

22. Using the right triangle below what is  $\cos 71.08^\circ$



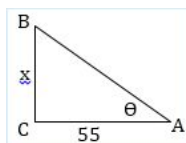
**ANSWER: 12/37**

23. What expression gives the hypotenuse h of the triangle below?



**ANSWER:  $\frac{12}{\cos 20}$**

24. If  $\cot \theta = \frac{11}{60}$ , then what is x?

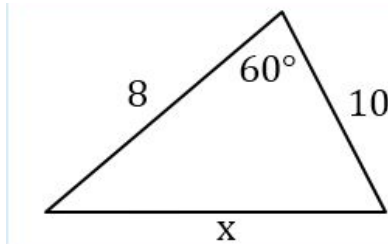


ANSWER: **300**

25. If the equation  $\frac{d}{\sin K} = \frac{s}{\sin F}$  is an expression of the Law of Sines, then which of the following statements must be true?

ANSWER: **The length of the side opposite to K is d.**

26. Which of the following statement is TRUE about the situation below?

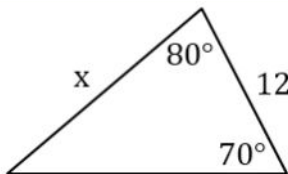


ANSWER: **It can't be solved using Law of Sines.**

27. Which of the following equations is equivalent to the equation  $\frac{m}{\sin L} = \frac{h}{\sin V}$  ?

ANSWER:  $h = \frac{m \sin V}{\sin L}$

28. Solve for x in the triangle below.



ANSWER: **22.55**

29. The equation  $\frac{12}{\sin 57} = \frac{w}{\sin 83}$  is a result of the application of the Law of Sines to a triangle. Which of the following statements is NOT true?

ANSWER: **The smallest angle in this triangle has a measure of 57° .**

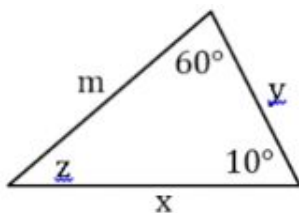
30. Using the Law of Sines in a triangle, the equations  $\frac{x}{\sin K} = \frac{w}{\sin P} = \frac{y}{\sin R}$  are formed. Which of the following statements is TRUE about the triangle?

ANSWER: **Opposite the angle with measure P is the side with measure w.**

31. In ASA case, the endpoints of the given side are the vertices of the two given angles.

**TRUE**

32. Which of the following unknowns below can be determined?



ANSWER: **z**

$$\frac{a}{\sin A} = \frac{b}{\sin B} \text{ is the same as } \frac{b \sin A}{a} = \sin B$$

33.

**TRUE**

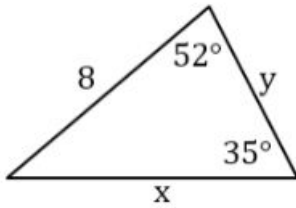
34. The Law of Sines can be used to solve a triangle with an SAA situation.

**TRUE**

\*The sine law can be used to solve an oblique triangle in the following situation;

- SAA: Given the two angles and the side opposite one of them
- ASA: Given two angles and an included sided

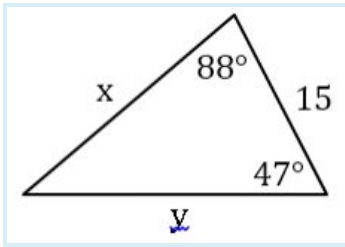
35. Which of the following equations can be formed from the triangle below?



$$\frac{y}{\sin 93} = \frac{8}{\sin 35}$$

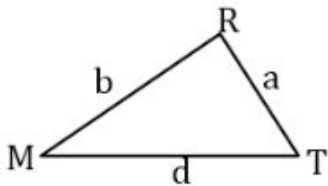
ANSWER:

36. Solve for y in the triangle below.



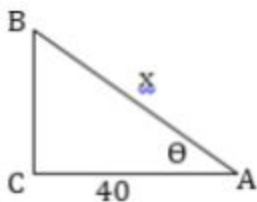
ANSWER: **21.20**

37. Which of the following equations is a result of the application of the Law of Sines on the triangle below?



ANSWER:  **$b \sin M = a \sin T$**

38. If  $\sec \theta = \frac{17}{8}$ , then what is x?

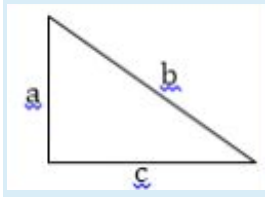


ANSWER: **85**

39. A 13 feet ladder is placed on a vertical wall such that the top of the ladder is 12 feet high up the wall. How far is the foot of ladder from the wall?

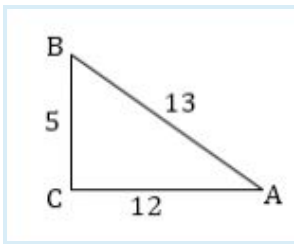
ANSWER: **5 feet**

40. If we apply the Pythagorean theorem in the right triangle below, then what expression solves for the value of b?



ANSWER:  $\sqrt{a^2 + c^2}$

41. In right  $\triangle ABC$ ,  $\sec A = ?$



ANSWER: **13/12**