

Name: Solution Station

TRIG TEST REVIEW

- 1) Which expression is equivalent to $\cos 330^\circ$?
- a. $\cos 330^\circ$
 - b. $\cos (-30^\circ)$
 - c. $\cos (-210^\circ)$

- 2) Find the exact value of $\cos 315^\circ$

$$\frac{\sqrt{2}}{2}$$

- 3) Which function is a translation of $y = \cos x$ by 3 units to the right and 2 units up?

- a. $y = \cos (x+3) + 2$
- b. $y = \cos (x-3) + 2$
- c. $y = \cos (x+2) + 3$
- d. $y = \cos (x-2) + 3$

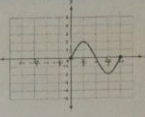
- 4) Find the reference angle for 345°

$$15^\circ$$

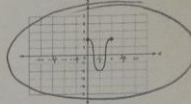
- 5) Find the exact value of $\csc (2\pi/3)$ (exact value = RADICAL FORM)

$$\frac{2\sqrt{3}}{3}$$

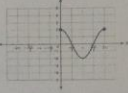
- 6) Which graph best represents one cycle of $f(x) = 2 \cos 2x$



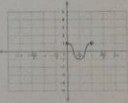
a.



b.



c.



d.

- 7) A minute hand on a clock is 4 inches long. How far has it traveled after 35 minutes pass?

$$r = 4$$

$$\frac{35}{60} = \frac{x}{2\pi(4)}$$

$$4.67\pi \text{ or } 14.66 \text{ inches}$$

8) A 5-inch minute hand on a clock travels a total of 7 feet. How much time passed while this occurred?

$$2\pi(5) = 31.4 \text{ inches}$$

$$7(12) = \frac{84 \text{ inches}}{31.4 \text{ inches}} = 2.68 \text{ hours}$$

or 2hrs 41min

9) Use your calculator to find the value for $\cot 88^\circ$

$$0.035$$

10) Use your calculator to find the value for $\csc 25$

$$1.67$$

11) The period of a sine function that is flipped over is 2π . It is moved right four units and down two units from the parent graph of $\cos x$. The amplitude of the graph is 5. Write the equation of the function.

$$y = -5 \cos(x-4) - 2$$

12) 8 cycles of a function are visible between 0 and 2π . What is the period of the function?

$$\frac{2\pi}{8} = \left[\frac{\pi}{4} \right]$$

13) Multiply: $\left[\cot\left(\frac{\pi}{3}\right) \right] \left[\sec\left(\frac{\pi}{4}\right) \right]$

$$\frac{\frac{1}{\sqrt{3}}}{\frac{2}{2}} \cdot \frac{2}{\sqrt{2}} = \frac{1}{\sqrt{3}} \cdot \frac{2}{\sqrt{2}} = \frac{2}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6}}{6} = \left[\frac{\sqrt{6}}{3} \right]$$

14) Sam's pen is 1 ft up on the outer edge of a graph of the unit circle at the point $(0, 1)$. She moved the pen $\frac{5\pi}{6}$ radians in the clockwise direction along the edge of the circle. At what angle of the unit circle did her pen stop?

$$\left[\frac{5\pi}{6} \text{ radians} \right]$$

15) A pizza pie with diameter of 16 in. is cut into 8 equal slices. How long is the crust of one slice of pizza? Round your answer to the nearest tenth of an inch.

$$r = 8 \quad 2\pi(r) = \frac{16\pi}{8} = \left[\begin{array}{l} 2\pi \text{ inches} \\ \text{or} \\ 6.28 \text{ inches} \end{array} \right]$$

Write an equation for each of the following translations.

16. $y = \cos x$, 3 units right

17. $y = \sin x$, 5 units down

18. $y = \cos x$, π units left and 2 units up

$$y = \cos(x-3)$$

$$\sin x - 5$$

$$y = \cos(x+\pi) + 2$$

Find each value without using a calculator.

19. $\sec \frac{5\pi}{3}$

20. $\csc \frac{\pi}{2}$

21. $\cot \frac{3\pi}{4}$

2

1

-1

Verify each identity.

22. $\tan \theta (\cot \theta + \tan \theta) = \sec^2 \theta$

23. $\sec \theta \sin \theta \cot \theta = 1$

$$\tan \theta \left(\frac{\cos \theta}{\sin \theta} + \frac{\sin \theta}{\cos \theta} \right)$$

$$= \tan \theta \left(\frac{\cos^2 \theta + \sin^2 \theta}{\sin \theta \cos \theta} \right)$$

$$\left(\frac{1}{\cos \theta} \right) \left(\frac{\sin \theta}{1} \right) \left(\frac{\cos \theta}{\sin \theta} \right) = 1$$

$$1 = 1$$

✓

$$= \tan \theta \left(\frac{1}{\sin \theta \cos \theta} \right)$$

$$= \frac{\sin \theta}{\cos \theta} \left(\frac{1}{\sin \theta \cos \theta} \right)$$

$$= \frac{1}{\cos^2 \theta} = \sec^2 \theta$$

$$\sec^2 \theta = \sec^2 \theta$$

✓

24. $\cos^2 \theta \csc^2 \theta + \cos^2 \theta \sec^2 \theta = \csc^2 \theta$

25. $\cot \theta \cos \theta + \sin \theta = \csc \theta$

$$\cos^2 \theta \left(\frac{1}{\sin^2 \theta} \right) + \cos^2 \theta \left(\frac{1}{\cos^2 \theta} \right)$$

$$\frac{\cos^2 \theta}{\sin^2 \theta} + \frac{\cos^2 \theta}{\cos^2 \theta} = \csc^2 \theta$$

$$\cot^2 \theta + 1 = \csc^2 \theta$$

$$\csc^2 \theta = \csc^2 \theta$$

$$\left(\frac{\cos \theta}{\sin \theta} \right) (\cos \theta) + (\sin \theta) = \csc \theta$$

$$\frac{\cos^2 \theta}{\sin \theta} + \frac{\sin^2 \theta}{\sin \theta} = \csc \theta$$

$$\frac{\cos^2 \theta + \sin^2 \theta}{\sin \theta} = \csc \theta$$

$$\frac{1}{\sin \theta} = \csc \theta$$

$$\csc \theta = \csc \theta$$

Use your unit circle to find:

26. $\sin 315^\circ = \frac{-\sqrt{2}}{2}$

27. $\cos 60^\circ = \frac{1}{2}$

28. $\tan 210^\circ = \frac{1/\sqrt{3}}{-2} = -\frac{\sqrt{3}}{2}$

29. $\cos 180^\circ = -1$

30. $\tan \frac{3\pi}{4} = 1$

31. $\sin \frac{3\pi}{2} = -1$

32. $\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$

33. $\tan \pi = \frac{0}{-1} = 0$

34. $\sec 225^\circ = -\sqrt{2}$

35. $\cot 150^\circ = \frac{-\sqrt{3}}{1/2} = -2\sqrt{3}$

36. $\csc 30^\circ = 2$

37. $\sec 330^\circ = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

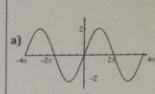
38. There are two angles on the unit circle with an undefined tangent value and two angles with an undefined cotangent value. What are these angles?

Undefined Tangent: $\frac{\pi}{2}, \frac{3\pi}{2}$ Undefined Cotangent: $0, \pi$

How can you tell from the coordinates that the tangent will be undefined for its two angles and the cotangent will be undefined for its two angles?

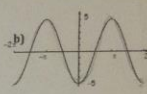
Since $\tan = \frac{\sin}{\cos}$, \tan will be undefined when $\cos = 0$
 Since $\cot = \frac{\cos}{\sin}$, \cot will be undefined when $\sin = 0$

39) Give the period and amplitude of the following functions.



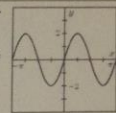
Period: 4π

Amp: 2



Period: 2π

Amp: 5



Period: π

Amp: 2