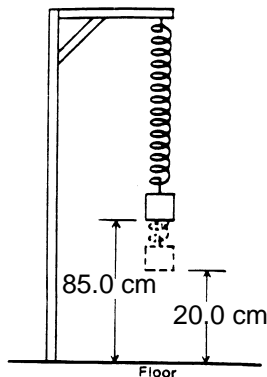


Name _____ Period _____

You may use a calculator on this part of the review. Show ALL work for full credit.

1. A weight attached to the end of a long spring is bouncing up and down. As it bounces, its distance from the floor varies sinusoidally with time. You start the stopwatch. When the stopwatch reads 0.70 second, the weight first reaches a high point 85.0 centimeters above the floor. The next low point, 20.0 centimeters above the floor, occurs at 2.10 seconds.



- What is the amplitude of the equation which describes the motion of the weight?
- What is the period of the equation which describes the motion of the weight?
- What is the vertical displacement of the equation which describes the motion of the weight?
- What is the horizontal displacement of the cosine function which describes the motion of the weight?
- What is the distance from the floor when the stopwatch reads 18.5 s?

2. Shelbi is standing in a tower that puts her eye at 35 ft above the ground. Looking through a telescope she sees Sarah coming. She notes that the angle of depression of the telescope is 3° . Assuming the ground is perfectly level, how far away is Sarah from the base of the tower?

3. A 15-foot ladder makes an angle of 55° with the ground as it leans against a house. How far up the house does the ladder reach?

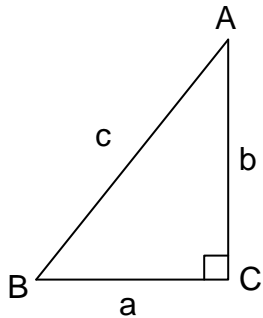
4. At a distance of 67 feet from the base of a flag pole, the angle of elevation to the top of a flag is 28.7° . The pole extends 1 foot above the flag. Find the height of the pole.

5. Given a triangle $\triangle ABC$ with $m\angle A = 55^\circ$, $m\angle B = 35^\circ$, $a = 45$, find the length of side c .

6. Given a triangle $\triangle ABC$ with $a = 14$, $b = 12$, $m\angle A = 25^\circ$, find the measure of angle B .

7. Given a triangle $\triangle ABC$ with $a = 6$, $b = 7$, and $c = 10$. Find the measure of angle A .

8. Given $\triangle ABC$ with $m\angle A = 115.0^\circ$, $m\angle B = 23.4^\circ$, and $c = 21$. Find the length of side a .



9. $a=15$, $A=37^\circ$ Find b .

10. $c=14$, $A=25^\circ$ Find a .

11. $a = 3$, $c = 7$ Find B .

12. Find the approximate value of $\cos(8.34\pi) =$.

Name _____ Period _____

You may not use a calculator on this part of the review. Show ALL work for full credit.

13. Find $\cos \theta$ and $\sin \theta$ if the terminal side of θ passes through $(6, 5)$ when θ is in standard position.

14. Find the reference angle for $\frac{4\pi}{3}$, $\frac{5\pi}{6}$, $\frac{5\pi}{4}$.

15. Give the exact values of

$$\sin \frac{8\pi}{3} \quad \sin \frac{7\pi}{4} \quad \csc \left(-\frac{5\pi}{6} \right)$$

$$\cos \frac{7\pi}{6} \quad \cos \frac{10\pi}{3} \quad \sec \left(\frac{5\pi}{6} \right)$$

$$\tan \frac{21\pi}{6} \quad \tan \frac{5\pi}{4} \quad \tan \left(-\frac{5\pi}{4} \right)$$

16. Use the trig identities to simplify $\sin^2 x + \sin^2 x \cot^2 x$.

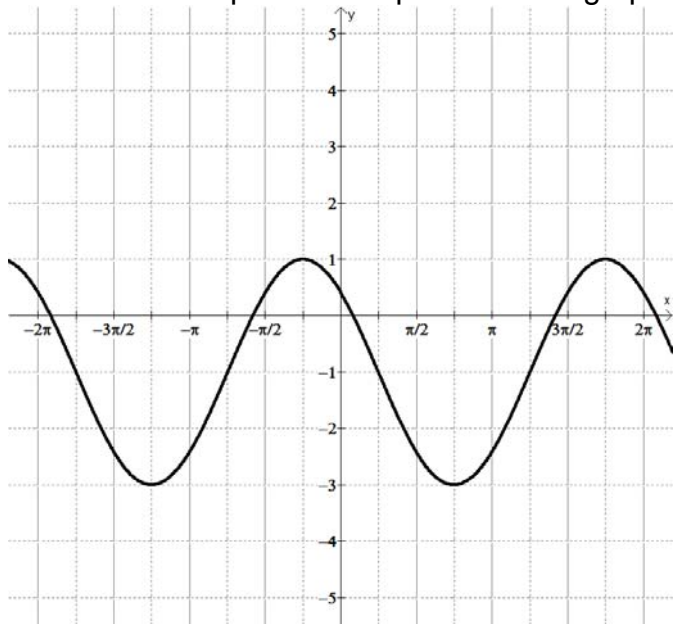
17. Suppose $\csc \theta = -2$ and the terminal side of the angle lies in Quadrant III.
Find $\sin \theta$, $\cos \theta$, $\tan \theta$.

18. What is the amplitude, the horizontal displacement, the vertical displacement, and the period of the equation $y = -3 + 7 \sin 6(x + 9)$?

19. Graph $y = 2 + 6 \cos \left(x - \frac{2\pi}{3} \right)$

20. Find a function that has an amplitude = 0.25 and period = 4π .

21. Find the amplitude and period of the graphed function.



22. Find the values of x in the interval $0 \leq x < 2\pi$ that satisfy the equation $x = \sin^{-1}\left(\frac{1}{2}\right)$.

23. Find the values of x in the interval $0 \leq x < 2\pi$ that satisfy the equation $x = \cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$.

24. Evaluate $x = \cos^{-1}\left(-\frac{1}{2}\right)$ and $x = \sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$.

25. Which value is equal to $y = \cos(\tan^{-1} 1)$?

26. If $\sin x = \frac{7}{9}$, use trigonometric identities to find $\csc x$.

27. If $\cos x = \frac{4}{5}$, use trigonometric identities to find $\sin x$.

28. Simplify the expression.

$$\frac{\cos^2 x}{1 - \sin x} =$$

29. Simplify the expression.

$$\frac{\cos x}{\sec x} + \frac{\sin x}{\csc x} =$$

30. Solve $2\sin x + 11 = 10$ for x . State the answer in radians for $0 \leq x \leq 2\pi$.

31. Solve $4\cos^2 x + 9 = 12$ for x . State the answer in radians for $0 \leq x \leq 2\pi$.

32. Solve $2\sin \theta + 9 = 8$ for θ . State the answer in radians for $0 \leq \theta \leq 2\pi$.

33. Solve $2\cos^2 \theta + 6 = 9$ for θ . State the answer in radians for $0 \leq \theta \leq 2\pi$.

34. Solve $3\tan^2 \theta + 6 = 5$ for θ . State the answer in radians for $0 \leq \theta \leq 2\pi$.

35. Solve $2\sin^2 x - \sin x = 1$ for x . State the answer in radians for $0 \leq x \leq 2\pi$.