

Read each answer choice carefully!*Evaluate each.*

1. $\sec(-450^\circ)$

- a) 0 b) 1 c) -1 d) Undefined e) None of these

2. $\sin(960^\circ)$

- a)
- $-\frac{1}{2}$
- b)
- $\frac{1}{2}$
- c)
- $\frac{\sqrt{3}}{2}$
- d)
- $-\frac{\sqrt{3}}{2}$
- e) None of these

3. $\cot(585^\circ)$

- a) 0 b) 1 c) -1 d) Undefined e) None of these

4. $\tan\left(-\frac{8\pi}{3}\right)$

- a)
- $-\frac{\sqrt{3}}{3}$
- b)
- $\frac{\sqrt{3}}{3}$
- c)
- $\sqrt{3}$
- d)
- $-\sqrt{3}$
- e) None of these

5. $\cos\left(\frac{11\pi}{4}\right)$

- a)
- $-\frac{\sqrt{3}}{2}$
- b)
- $\frac{\sqrt{3}}{2}$
- c)
- $-\frac{\sqrt{2}}{2}$
- d)
- $\frac{\sqrt{2}}{2}$
- e) None of these

6. $\csc\left(\frac{25\pi}{6}\right)$

- a) -2 b) 2 c)
- $\frac{2\sqrt{3}}{3}$
- d)
- $-\frac{2\sqrt{3}}{3}$
- e) None of these

Evaluate each.

7. $\sin^{-1}\left(-\frac{1}{2}\right)$

- a) $\frac{7\pi}{6}$ b) $\frac{5\pi}{6}$ c) $\frac{2\pi}{3}$ d) $-\frac{\pi}{3}$ e) None of these

8. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

- a) $-\frac{\pi}{4}$ b) $\frac{\pi}{4}$ c) $\frac{3\pi}{4}$ d) $\frac{5\pi}{4}$ e) None of these

9. $\tan^{-1}(-\sqrt{3})$

- a) $-\frac{\pi}{3}$ b) $\frac{2\pi}{3}$ c) $-\frac{\pi}{6}$ d) $\frac{5\pi}{6}$ e) None of these

10. $\arcsin(0)$

- a) 0 b) $\frac{\pi}{2}$ c) $\frac{3\pi}{2}$ d) π e) None of these

11. $\arccos(0)$

- a) 0 b) $\frac{\pi}{2}$ c) $\frac{3\pi}{2}$ d) π e) None of these

12. Identify the quadrant in which θ terminates given that $\tan\theta < 0$ and $\sin\theta < 0$.

- a) Quad I b) Quad II c) Quad III d) Quad IV e) None of these

13. Identify the quadrant in which θ terminates given that $\csc\theta < 0$ and $\sec\theta < 0$.

- a) Quad I b) Quad II c) Quad III d) Quad IV e) None of these

14. Identify the quadrant in which θ terminates given that $\cot\theta < 0$ and $\cos\theta < 0$.

- a) Quad I b) Quad II c) Quad III d) Quad IV e) None of these

15. Identify the quadrant in which θ terminates given that $\sec\theta < 0$ and $\cos\theta > 0$.
- a) Quad I b) Quad II c) Quad III d) Quad IV e) None of these

16. Given $\theta = -115^\circ$, find the value of $\hat{\theta}$ (theta hat).
- a) 245° b) 65° c) 25° d) 75° e) None of these

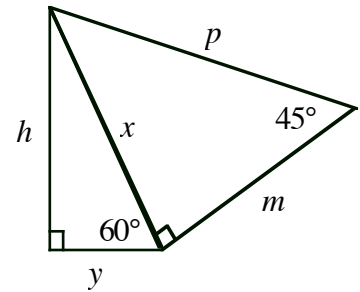
17. Given $\theta = 525^\circ$, find the value of $\hat{\theta}$ (theta hat).
- a) 65° b) 25° c) 15° d) 165° e) None of these

18. Given θ is in Quadrant II and $\cot\theta = -\frac{1}{3}$, find the value of $\cos\theta$.
- a) $-3\sqrt{10}$ b) $-\frac{3\sqrt{10}}{10}$ c) $-\sqrt{10}$ d) $-\frac{\sqrt{10}}{10}$ e) None of these

19. Given θ is in Quadrant IV and $\cos\theta = \frac{1}{4}$, find the value of $\cot\theta$.
- a) $-\frac{\sqrt{15}}{15}$ b) $-4\sqrt{15}$ c) $-\frac{4\sqrt{15}}{15}$ d) $-\sqrt{15}$ e) None of these

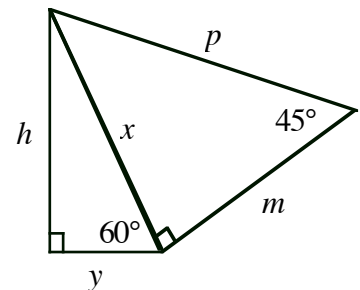
20. For the diagram at right, given $h = 12$, use 30-60-90 and 45-45-90 triangle relationships to find the value of p ,

- a) $4\sqrt{6}$ b) $8\sqrt{6}$ c) $3\sqrt{6}$ d) $6\sqrt{6}$ e) None of these



21. For the diagram at right, given $p = 20\sqrt{3}$, use 30-60-90 and 45-45-90 triangle relationships to find the value of h ,

- a) $5\sqrt{6}$ b) $15\sqrt{6}$ c) $5\sqrt{2}$ d) $15\sqrt{2}$ e) None of these



22. Evaluate $\sin(105^\circ)\cos(165^\circ) + \sin(165^\circ)\cos(105^\circ)$ using a sum, difference, or double angle formula.

- a) Undefined b) -1 c) $-\frac{1}{2}$ d) $-\frac{\sqrt{3}}{2}$ e) None of these

23. Evaluate $\cos(75^\circ)\cos(195^\circ) + \sin(195^\circ)\sin(75^\circ)$ using a sum, difference, or double angle formula.

- a) -1 b) $-\frac{1}{2}$ c) $-\frac{\sqrt{3}}{2}$ d) Undefined e) None of these

24. Evaluate $\cos^2\left(\frac{3\pi}{8}\right) - \sin^2\left(\frac{3\pi}{8}\right)$ using a sum, difference, or double angle formula.

- a) 1 b) -1 c) $-\frac{\sqrt{2}}{2}$ d) $\frac{\sqrt{2}}{2}$ e) None of these

25. Evaluate $2\sin\left(\frac{7\pi}{12}\right)\cos\left(\frac{7\pi}{12}\right)$ using a sum, difference, or double angle formula.

- a) $\frac{1}{2}$ b) $-\frac{1}{2}$ c) $-\frac{\sqrt{3}}{2}$ d) $\frac{\sqrt{3}}{2}$ e) None of these

26. Given $f(t) = -4\sin(3t)$, find $f\left(\frac{5\pi}{6}\right)$.

- a) -1 b) 0 c) -4 d) 1 e) None of these

27. Given $f(t) = \sec\left(t + \frac{\pi}{3}\right)$ find $f\left(\frac{5\pi}{6}\right)$.

- a) -1 b) Undefined c) -2 d) $-\frac{2\sqrt{3}}{3}$ e) None of these

28. Find x given $\sin(x) = \frac{\sqrt{3}}{2}$ and $-\frac{3\pi}{2} \leq x \leq -\frac{\pi}{2}$.

- a) $x = -\frac{2\pi}{3}$ b) $x = -\frac{5\pi}{6}$ c) $x = -\frac{4\pi}{3}$ d) $x = -\frac{7\pi}{6}$ e) None of these

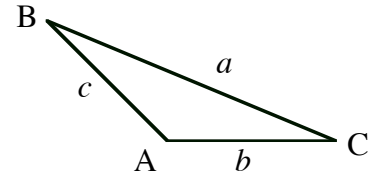
29. Find x given $\sec(x) = -2$ and $-\pi \leq x \leq 0$.
- a) $x = -\frac{2\pi}{3}$ b) $x = -\frac{5\pi}{6}$ c) $x = -\frac{\pi}{3}$ d) $x = -\frac{\pi}{6}$ e) None of these
30. What is the period for the graph of $f(x) = 2\cos\left(\frac{5}{12}x - \frac{3\pi}{8}\right)$?
- a) $\frac{24\pi}{5}$ b) $\frac{6\pi}{5}$ c) $\frac{5\pi}{24}$ d) $\frac{5\pi}{6}$ e) None of these
31. What is the direction and amount of shift for the graph of $f(x) = 2\cos\left(\frac{5}{12}x - \frac{3\pi}{8}\right)$?
- a) right $\frac{9\pi}{10}$ b) right $\frac{10\pi}{9}$ c) left $\frac{10\pi}{9}$ d) left $\frac{9\pi}{10}$ e) None of these
32. In the graph of $f(x) = -4\sec\left(\frac{8}{5}x\right)$, where is the first asymptote on the positive x -axis?
- a) at $x = \frac{5\pi}{16}$ b) at $x = \frac{5\pi}{8}$ c) at $x = \frac{4\pi}{5}$ d) at $x = \frac{8\pi}{5}$ e) None of these
33. In the graph of $f(x) = 5\csc\left(\frac{5}{8}x\right)$, where is the first asymptote on the positive x -axis?
- a) at $x = \frac{8\pi}{5}$ b) at $x = \frac{4\pi}{5}$ c) at $x = \frac{5\pi}{8}$ d) at $x = \frac{5\pi}{16}$ e) None of these
34. Given θ is in Quadrant I and $\sec\theta = \sqrt{5}$, evaluate $\cos(2\theta)$.
- a) $\frac{3}{5}$ b) $-\frac{3}{5}$ c) $-\frac{\sqrt{5}}{5}$ d) $\frac{\sqrt{5}}{5}$ e) None of these
35. Given θ is in Quadrant II and $\csc\theta = \sqrt{6}$, evaluate $\cos(2\theta)$.
- a) $\frac{2}{3}$ b) $-\frac{2}{3}$ c) $-\frac{1}{3}$ d) $\frac{1}{3}$ e) None of these

36. In triangle ABC, $a = 14$, $b = 6$, and $c = 10$. Use a Law of Cosines to find $m\angle A$.

(Hint: $11^2 = 121$, $12^2 = 144$, $13^2 = 169$, $14^2 = 196$, $15^2 = 225$, $16^2 = 256$)

$$a^2 = b^2 + c^2 - 2bc \cdot \cos(A) \quad \cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

- a) 30° b) 60° c) 120° d) 150° e) None of these

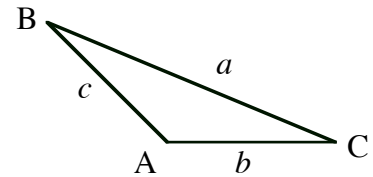


37. In triangle ABC, $m\angle A = 120^\circ$, $b = 7$, and $c = 8$. Use a Law of Cosines to find the length of **side a**.

(Hint: $11^2 = 121$, $12^2 = 144$, $13^2 = 169$, $14^2 = 196$, $15^2 = 225$, $16^2 = 256$)

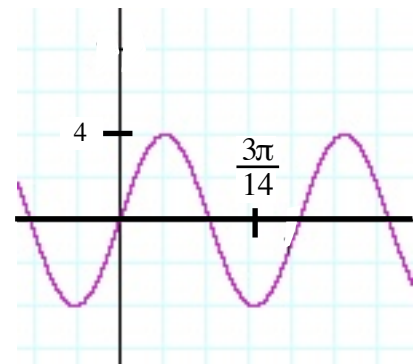
$$a^2 = b^2 + c^2 - 2bc \cdot \cos(A) \quad \cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

- a) 15 b) 13 c) $\frac{13}{2}$ d) $\frac{15}{2}$ e) None of these



38. Identify the function shown. Write it in the form of either $f(x) = A \sin(Bx)$ or $f(x) = A \cos(Bx)$

- a) $f(x) = 4\sin\left(\frac{4}{7}x\right)$ b) $f(x) = 4\sin\left(\frac{7}{4}x\right)$
 c) $f(x) = 4\sin\left(\frac{28}{3}x\right)$ d) $f(x) = 4\sin(7x)$
 e) None of these



Answers:

- | | | | | |
|--------------|--------------|--------------|--------------|--------------|
| 1. d | 2. d | 3. b | 4. c | 5. c |
| 6. b | 7. e | 8. c | 9. a | 10. a |
| 11. b | 12. d | 13. c | 14. b | 15. e |
| 16. b | 17. c | 18. d | 19. a | 20. b |
| 21. d | 22. b | 23. b | 24. c | 25. b |
| 26. c | 27. d | 28. c | 29. a | 30. a |
| 31. a | 32. a | 33. a | 34. b | 35. a |
| 36. c | 37. b | 38. d | | |