

1. In which quadrant is the secant function positive and the cosecant function negative?

- a) I b) II c) III d) IV e) not given

2. The $\sin \frac{\pi}{6}$ is equivalent to

- a) 30° b) $\frac{\sqrt{3}}{2}$ c) $\frac{1}{2}$ d) $\frac{\sqrt{2}}{2}$ e) not given

3. The $\cos 135^\circ$ is equivalent to

- a) $\cos 90^\circ + \cos 45^\circ$ b) $\sin 135^\circ$ c) $\frac{\sqrt{2}}{2}$ d) $\cos \frac{-\pi}{4}$ e) not given

4. The $\cos \frac{-\pi}{3}$ is equivalent to

- a) $\sin \frac{5\pi}{6}$ b) $\frac{\sqrt{3}}{2}$ c) $-\frac{1}{2}$ d) $\frac{-\sqrt{3}}{2}$ e) not given

5. The $\csc \frac{\pi}{6}$ is equivalent to

- a) $\frac{1}{\cos \frac{\pi}{6}}$ b) $\sin \frac{6}{\pi}$ c) $\csc \frac{-\pi}{6}$ d) 2 e) not given

6. The value of $\sin -240^\circ$ is

- a) $\frac{1}{2}$ b) $\frac{-1}{2}$ c) $\frac{\sqrt{3}}{2}$ d) $\frac{-\sqrt{3}}{2}$ e) not given

7. The radian measure for the angle 225° is

- a) $\frac{\pi}{4}$ b) $\frac{3\pi}{4}$ c) $\frac{5\pi}{4}$ d) $\frac{-7\pi}{4}$ e) not given

8. Find the exact value of $\sec \frac{\pi}{3} + \cot \frac{\pi}{4} + \csc \frac{\pi}{6}$

- a) $\frac{3}{2} + \frac{\sqrt{3}}{2}$ b) 5 c) 2 d) 1 e) not given

9. Find the exact value of $\sin 270^\circ + \cos 120^\circ$

- a) $\frac{1}{2}$ b) $-\frac{1}{2}$ c) $\frac{3}{2}$ d) $-\frac{3}{2}$ e) not given

10. The value of $\arcsin\left(\frac{-\sqrt{2}}{2}\right)$ is

- a) $-\frac{\pi}{4}$ b) $\frac{\pi}{4}$ c) $-\frac{3\pi}{4}$ d) $\frac{5\pi}{4}$ e) not given

11. Given the equation $\sec \theta = \frac{1}{2}$, the value of θ is

- a) $\frac{\pi}{3}$ b) $\frac{\pi}{6}$ c) no solution d) $\frac{5\pi}{3}$ e) not given

12. The expression $(1 + \sin \theta)(1 - \sin \theta)$ is equivalent to

- a) 1 b) $\sec^2 \theta$ c) $\csc^2 \theta$ d) $\cos^2 \theta$ e) not given

13. The expression $\cos^2 \theta + \tan^2 \theta + \sin^2 \theta$ is equivalent to

- a) $(\cos \theta + \tan \theta + \sin \theta)^2$ b) $\sec^2 \theta$ c) $\csc^2 \theta$ d) 1 e) not given

14. The expression $\sin 2\theta$ is equivalent to

- a) $2\sin\theta\cos\theta$ b) $\sin\theta + \sin\theta$ c) $\cos^2\theta - \sin^2\theta$ d) $\sin^2\theta - \cos^2\theta$ e) not given

15. The expression $(\cos x - \sin x)^2$ is equivalent to

- a) 1 b) $\cos^2\theta - \sin^2\theta$ c) $1 - \sin 2x$ d) 0 e) not given

16. If $\cos\theta = \frac{-5}{13}$ and $\tan\theta > 0$, then the value of $\sin\theta$ is

- a) $\frac{-5}{12}$ b) $\frac{5}{12}$ c) $\frac{5}{13}$ d) $\frac{12}{13}$ e) not given

17. If a non-horizontal line has a slope of $\sin\theta$, it will be perpendicular to a line with slope

- a) $\cos\theta$ b) $-\cos\theta$ c) $\csc\theta$ d) $-\csc\theta$ e) not given

18. The angles with radian measures of $\frac{3\pi}{16}$ and $\frac{5\pi}{16}$ are

- a) coterminal b) supplementary c) complementary d) perpendicular e) not given

19. If $\csc\theta = \frac{13}{5}$ and $\cot\theta = \frac{12}{5}$, then $\sin\theta$ is equal to

- a) $\frac{12}{13}$ b) $\frac{13}{5}$ c) $\frac{5}{12}$ d) $\frac{5}{13}$ e) not given

20. If $\csc\theta = \frac{13}{5}$ and $\cot\theta = \frac{12}{5}$, then $\cos\theta$ is equal to

- a) $\frac{12}{13}$ b) $\frac{13}{5}$ c) $\frac{5}{12}$ d) $\frac{5}{13}$ e) not given

21. State the amplitude and period (in that order) for the equation $y = 2 - 3 \cos 2x$.

- a) $-3; 2$ b) $2; -3$ c) $3; \pi$ d) $-3; 2\pi$ e) not given

22. State the amplitude and period (in that order) for the equation $y = 3 + 2 \sin\left(\frac{\pi}{2}x\right)$.

- a) $3; \frac{\pi}{2}$ b) $2; 4$ c) $2; \frac{\pi}{2}$ d) $3; 2$ e) not given

23. State the period and phase shift (in that order) for the equation $y = 2 + 3 \sin(2x + \pi)$.

- a) $3; -\frac{\pi}{2}$ b) $2; 3$ c) $4\pi; -\frac{\pi}{4}$ d) $\pi; \frac{\pi}{4}$ e) not given

24. State the period of the function $y = |\sin x|$.

- a) $\frac{\pi}{2}$ b) π c) 2π d) 3π e) not given

25. The shortest side of a triangle with angles measuring 50° , 60° , and 70° has length 9.0 inches. Find the length of the longest side of the triangle.

- a) ≈ 11.0 inches b) ≈ 11.5 inches c) ≈ 12.0 inches d) ≈ 13 inches e) not given

26. Find the area of a triangle with sides 7 cm, 8 cm, and 9 cm.

- a) $6\sqrt{15} \text{ cm}^2$ b) $12\sqrt{5} \text{ cm}^2$ c) $16\sqrt{3} \text{ cm}^2$ d) $17\sqrt{3} \text{ cm}^2$ e) not given

27. Which of the following is the magnitude of the vector $\langle 2, -1 \rangle$?

- a) 1 b) $\sqrt{3}$ c) $\frac{\sqrt{5}}{5}$ d) $\sqrt{5}$ e) not given

28. Let $\mathbf{u} = \langle 1, 1 \rangle$ and $\mathbf{v} = \langle -1, 1 \rangle$. Find the measure of the angle between vector \mathbf{u} and \mathbf{v} .

- a) 0° b) 45° c) 60° d) 90° e) not given

29. Which of the following are the rectangular coordinates of the point with polar coordinates $\left(-2, \frac{-\pi}{3}\right)$?

- a) $(-\sqrt{3}, 1)$ b) $(-1, -\sqrt{3})$ c) $(-1, \sqrt{3})$ d) $(1, -\sqrt{3})$ e) not given

30. If $r \neq 0$, which of the following polar coordinate pairs represent the same point as the point with the polar coordinates (r, θ) ?

- a) $(-r, \theta + 2\pi)$ b) $(-r, \theta + 3\pi)$ c) $(-r, \theta)$ d) $(r, \theta + \pi)$ e) not given

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1. D
2. C
3. E
4. A
5. D
6. C
7. C
8. B
9. D
10. A
11. C
12. D
13. B
14. A
15. C
16. E
17. D
18. C
19. D
20. A
21. C
22. B
23. E
24. B
25. A
26. B
27. D
28. D
29. C
30. B