

Trigonometry Midterm will have 50 questions, no calculator, 1 point per question

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Practice all problems, then check answers on last page

Convert each degree measure into radians and each radian measure into degrees.

1) 30°

A) $\frac{\pi}{6}$

B) $\frac{4\pi}{9}$

C) $\frac{2\pi}{9}$

D) $\frac{\pi}{9}$

2) $\frac{25\pi}{18}$

A) 245°

B) 250°

C) 290°

D) 210°

3) -245°

A) $-\frac{4\pi}{3}$

B) $-\frac{47\pi}{18}$

C) $-\frac{49\pi}{36}$

D) $-\frac{17\pi}{12}$

4) -135°

A) $-\frac{3\pi}{4}$

B) $-\frac{7\pi}{9}$

C) $-\frac{3\pi}{2}$

D) $-\frac{29\pi}{36}$

5) $\frac{2\pi}{3}$

A) 105°

B) 95°

C) 120°

D) 100°

6) $\frac{11\pi}{3}$

A) 660°

B) 1320°

C) 755°

D) 645°

7) $\frac{3\pi}{2}$

A) 540°

B) 240°

C) 315°

D) 270°

8) $\frac{5\pi}{6}$

A) 270°

B) 300°

C) 125°

D) 150°

Find the exact value of each trigonometric function.

9) $\sin -300^\circ$

A) $\sqrt{3}$

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

C) $\frac{1}{2}$

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

10) $\sec 315^\circ$

A) $-\frac{\sqrt{2}}{2}$

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

C) -1

D) $\sqrt{2}$

11) $\cos 180^\circ$

A) -2

B) Undefined

C) -1

D) 0

12) $\tan -\frac{5\pi}{6}$

A) 0

B) -2

C) -1

D) $\frac{\sqrt{3}}{3}$

13) $\sin \frac{\pi}{3}$

A) $\frac{1}{2}$

B) $\sqrt{3}$

C) $-\frac{1}{2}$

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

14) $\sin 0$

A) $\frac{\sqrt{3}}{3}$

B) 0

C) Undefined

D) $-\frac{\sqrt{2}}{2}$

15) $\cot 0^\circ$

A) $-\frac{\sqrt{3}}{3}$

B) $-\sqrt{3}$

C) $-\frac{2\sqrt{3}}{3}$

D) Undefined

16) $\csc 135^\circ$

A) $-\frac{\sqrt{3}}{3}$

B) $\sqrt{2}$

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

D) $-\frac{2\sqrt{3}}{3}$

Find the value of the trig function indicated.

17) Find $\sec \theta$ if $\csc \theta = \frac{5}{4}$

- A) $\frac{3}{4}$ B) $\frac{4}{5}$
C) $\frac{5}{3}$ D) $\frac{4}{3}$

18) Find $\sin \theta$ if $\sec \theta = \frac{7}{3}$

- A) $\frac{2\sqrt{10}}{7}$ B) $\frac{2\sqrt{10}}{3}$
C) $\frac{3}{5}$ D) $\frac{5}{3}$

19) Find $\tan \theta$ if $\sec \theta = \frac{\sqrt{13}}{3}$

- A) $\frac{\sqrt{13}}{2}$ B) $\frac{3\sqrt{13}}{13}$
C) $\frac{\sqrt{13}}{3}$ D) $\frac{2}{3}$

20) Find $\sin \theta$ if $\tan \theta = \frac{\sqrt{2}}{4}$

- A) $\frac{3}{4}$ B) $2\sqrt{2}$
C) $\frac{1}{3}$ D) $\frac{\sqrt{13}}{3}$

21) Find $\sin \theta$ if $\cos \theta = \frac{3}{5}$

- A) $\frac{3}{5}$ B) $\frac{5}{4}$
C) $\frac{4}{3}$ D) $\frac{4}{5}$

22) Find $\cos \theta$ if $\sec \theta = \frac{9}{5}$

- A) $\frac{9}{5}$ B) $\frac{5\sqrt{14}}{28}$
C) $\frac{5}{9}$ D) $\frac{9\sqrt{14}}{28}$

Use the given point on the terminal side of angle θ to find the value of the trigonometric function indicated.

23) $\cot \theta$; $(10, 8)$

- A) $-\frac{2}{7}$ B) $\frac{5}{4}$
C) $-\frac{\sqrt{53}}{7}$ D) $-\frac{7}{2}$

24) $\cot \theta$; $(3, 13)$

- A) $-\frac{10\sqrt{109}}{109}$ B) $\frac{3}{13}$
C) $\frac{3}{10}$ D) $-\frac{\sqrt{109}}{3}$

25) $\sin \theta$; $(-\sqrt{13}, -6)$

- A) $-\frac{6}{7}$ B) $\frac{6\sqrt{13}}{13}$
C) $\frac{\sqrt{13}}{6}$ D) $-\frac{\sqrt{13}}{7}$

26) $\tan \theta$; $(-\sqrt{19}, -9)$

- A) $\frac{\sqrt{19}}{9}$ B) $-\frac{\sqrt{19}}{10}$
C) $\frac{9\sqrt{19}}{19}$ D) $-\frac{10\sqrt{19}}{19}$

Find the period in radians.

27) $y = \frac{1}{3} \cdot \sin\left(7\theta + \frac{\pi}{2}\right) + 5$

- A) $\frac{\pi}{4}$ B) $\frac{2\pi}{7}$
 C) $\frac{2\pi}{5}$ D) 4π

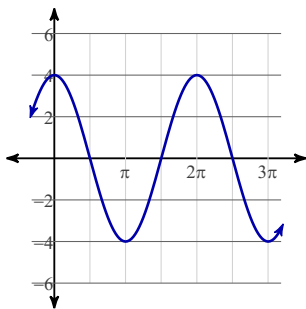
28) $y = 4\sin\left(\frac{\theta}{2} - \frac{3\pi}{4}\right) - 1$

- A) $\frac{2\pi}{3}$ B) 2π
 C) 4π D) 10π

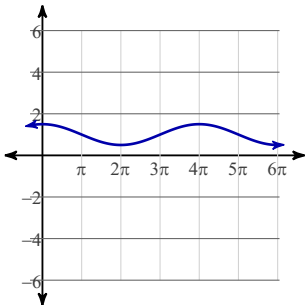
Graph each function using radians.

29) $y = \frac{1}{2} \cdot \cos\frac{\theta}{2} + 1$

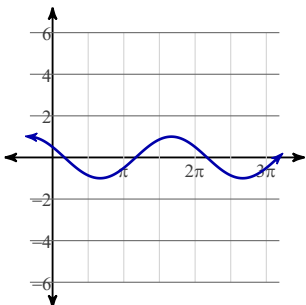
A)



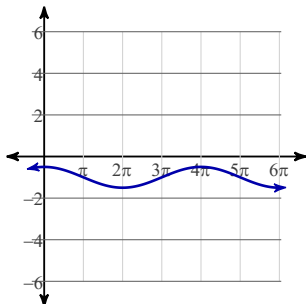
B)



C)

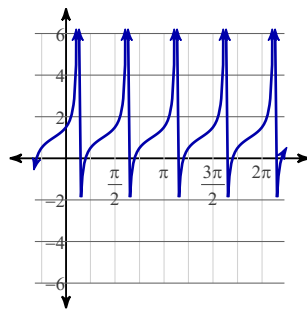


D)

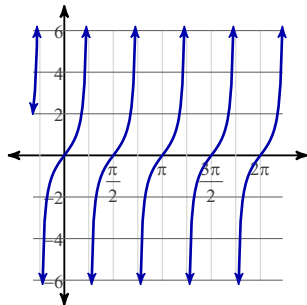


30) $y = 1 + \frac{1}{2} \cdot \tan\left(2\theta + \frac{5\pi}{4}\right)$

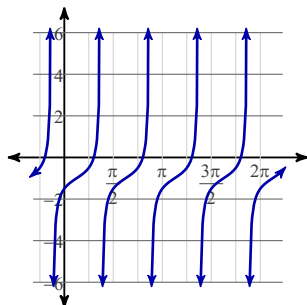
A)



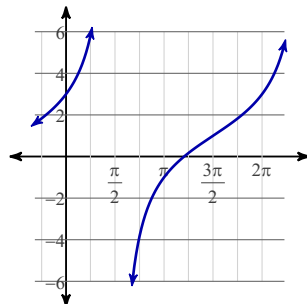
B)



C)



D)



Find the exact value of each expression.

31) $\cos \tan^{-1} 1$

- A) $\frac{\sqrt{2}}{2}$ B) $\sqrt{2}$
C) 1 D) π

32) $\sec \sin^{-1} \frac{3\sqrt{19}}{14}$

- A) $\frac{\pi}{2}$ B) $\frac{5}{14}$
C) $\frac{3\sqrt{19}}{5}$ D) $\frac{14}{5}$

33) $\csc \sec^{-1} \frac{6\sqrt{11}}{11}$

- A) $\frac{5\sqrt{11}}{11}$ B) $\frac{5}{6}$
C) $\frac{6}{5}$ D) $\frac{\sqrt{11}}{6}$

34) $\tan \csc^{-1} \frac{\sqrt{10}}{3}$

- A) 3 B) $\frac{3\sqrt{10}}{10}$
C) $\frac{\sqrt{10}}{3}$ D) $\frac{2\pi}{3}$

35) $\sin \sin^{-1} \frac{4\sqrt{6}}{11}$

- A) $\frac{4\sqrt{6}}{5}$ B) $\frac{4\sqrt{6}}{11}$
C) $\frac{5}{11}$ D) $\frac{11}{5}$

36) $\sec \cot^{-1} \frac{\sqrt{91}}{3}$

- A) $\frac{3}{10}$ B) $\frac{3\sqrt{91}}{91}$
C) $\frac{\sqrt{91}}{10}$ D) $\frac{10\sqrt{91}}{91}$

Find all solutions to each equation in radians.

37) $-2 + 3\cot \theta = \sqrt{3} - 2$

- A) $\left\{ \frac{\pi}{6} + \pi n \right\}$
- B) $\left\{ \frac{\pi}{3} + \pi n, \frac{\pi}{6} + \pi n \right\}$
- C) $\left\{ \frac{3\pi}{4} + \pi n, \frac{\pi}{6} + \pi n \right\}$
- D) $\left\{ \frac{\pi}{3} + \pi n \right\}$

38) $-10\cos \theta = 4\sqrt{3} - 2\cos \theta$

- A) $\left\{ \frac{5\pi}{6} + 2\pi n, \frac{\pi}{6} + 2\pi n \right\}$
- B) $\left\{ \frac{5\pi}{6} + 2\pi n, \frac{7\pi}{6} + 2\pi n \right\}$
- C) $\left\{ \frac{7\pi}{6} + 2\pi n, \frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n \right\}$
- D) $\left\{ \frac{7\pi}{6} + 2\pi n \right\}$

39) $-3\sqrt{3} + 1 = 1 - 9\tan \theta$

- A) $\left\{ \frac{\pi}{6} + \pi n \right\}$
- B) $\left\{ \frac{\pi}{6} + \pi n, \frac{11\pi}{6} + \pi n \right\}$
- C) $\left\{ \frac{11\pi}{6} + \pi n \right\}$
- D) $\left\{ \frac{\pi}{4} + \pi n \right\}$

40) $2\sqrt{2} + 2 = 2 + 4\sec \theta$

- A) $\left\{ \frac{11\pi}{6} + 2\pi n, \frac{3\pi}{4} + 2\pi n, \frac{\pi}{6} + 2\pi n \right\}$
- B) $\left\{ \frac{11\pi}{6} + 2\pi n \right\}$
- C) No solution.
- D) $\left\{ \frac{\pi}{6} + 2\pi n, \frac{11\pi}{6} + 2\pi n \right\}$

Solve each equation for $0 \leq \theta < 2\pi$.

41) $-4\tan \theta = \sqrt{2}\tan \theta \sin \theta - 3\tan \theta$

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

B) $\left\{0, \pi, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$

C) $\left\{0, \frac{3\pi}{4}, \pi\right\}$

D) $\left\{\frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \frac{3\pi}{2}\right\}$

42) $-2\sqrt{3}\cos \theta \sin \theta + 3\cos \theta + \sin \theta = \sin \theta$

A) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}\right\}$

B) $\left\{\frac{2\pi}{3}, \frac{5\pi}{6}, \frac{3\pi}{2}\right\}$

C) $\left\{\frac{\pi}{3}, \frac{\pi}{2}, \frac{2\pi}{3}, \frac{3\pi}{2}\right\}$

D) $\left\{\pi, \frac{3\pi}{2}\right\}$

43) $4 = 2\cot \theta + \cot^2 \theta + 5$

A) $\left\{\frac{7\pi}{4}\right\}$

B) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

C) $\left\{\frac{3\pi}{4}\right\}$

D) $\left\{\frac{2\pi}{3}, \pi, \frac{4\pi}{3}\right\}$

44) $4\sec \theta + 4 = -\sec^2 \theta$

A) $\left\{\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{2}\right\}$

B) $\left\{\frac{4\pi}{3}\right\}$

C) $\left\{0, \frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

D) $\left\{\frac{2\pi}{3}, \frac{4\pi}{3}\right\}$

Answers to Practice all problems, then check answers on last page

- | | | | |
|-------|-------|-------|-------|
| 1) A | 2) B | 3) C | 4) A |
| 5) C | 6) A | 7) D | 8) D |
| 9) B | 10) D | 11) C | 12) D |
| 13) D | 14) B | 15) D | 16) B |
| 17) C | 18) A | 19) D | 20) C |
| 21) D | 22) C | 23) B | 24) B |
| 25) A | 26) C | 27) B | 28) C |
| 29) B | 30) A | 31) A | 32) D |
| 33) C | 34) A | 35) B | 36) D |
| 37) D | 38) B | 39) A | 40) C |
| 41) B | 42) C | 43) B | 44) D |