

Identify Solutions to Trigonometric Equations, When Given Domain Restrictions

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

1) $\sin \theta = -\frac{\sqrt{2}}{2}$ ref $\angle = \frac{\pi}{4}$ III, IV

$\frac{5\pi}{4}$
 $\frac{7\pi}{4}$ } radians

2) $\cos \theta = -\frac{1}{2}$ ref $\angle = \frac{\pi}{3}$ II, III

$\frac{2\pi}{3}$
 $\frac{4\pi}{3}$ } radians

3) $\tan \theta = \frac{\sqrt{3}}{3}$

$\frac{\pi}{6}$
 $\frac{7\pi}{6}$ } radians

4) $\sin \theta = \frac{\sqrt{2}}{2}$

$\frac{\pi}{4}$
 $\frac{3\pi}{4}$ } radians

5) $\frac{\sqrt{3}}{2} = \cos \theta$

$\frac{\pi}{6}$
 $\frac{11\pi}{6}$ } radians

6) $\cos \theta = \sqrt{3}$

No solution

7) $\tan \theta = 1$

$\frac{\pi}{4}$
 $\frac{5\pi}{4}$ } radians

8) $\cos \theta = 0$

$\frac{\pi}{2}$
 $\frac{3\pi}{2}$ } radians

9) $\tan \theta = -1$

$\frac{3\pi}{4}$
 $\frac{7\pi}{4}$ } radians

10) $2 = \cos \theta$

No solution

11) $0 = \sin \theta$

0
 π } radians

12) $4\sqrt{3} = -4\tan \theta$

$-\sqrt{3} = \tan \theta$

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

13) $3 = -3\tan \theta$

$\frac{3\pi}{4}$
 $\frac{7\pi}{4}$ } radians

14) $\frac{\sqrt{2}}{2} = \sin \theta$

$\frac{\pi}{4}$
 $\frac{3\pi}{4}$ } radians

ITD sols to Trig Eqs w/domain restrictions

$$15) 1 + \sin \theta = \frac{2 - \sqrt{3}}{2}$$

$$\frac{4\pi}{3}, \frac{5\pi}{3}$$

radians

$$16) \frac{9}{2} = 4 + \cos \theta$$

$$\frac{\pi}{3}, \frac{5\pi}{3}$$

radians

$$17) \frac{6 + \sqrt{3}}{2} = 3 + \cos \theta$$

$$\frac{\pi}{6}, \frac{11\pi}{6}$$

radians

$$18) 8\cos \theta = -4\sqrt{3}$$

$$\frac{5\pi}{6}, \frac{7\pi}{6}$$

radians

$$19) -6\sin \theta = -3$$

$$\frac{\pi}{6}, \frac{5\pi}{6}$$

radians

$$20) -2 + \tan \theta = -3$$

$$\frac{3\pi}{4}, \frac{7\pi}{4}$$

radians

$$21) 1 + 4\tan \theta = -3$$

$$\frac{3\pi}{4}, \frac{7\pi}{4}$$

radians

$$22) -4 + 4\tan \theta = 0$$

$$\frac{\pi}{4}, \frac{5\pi}{4}$$

radians

$$23) 2 + \frac{1}{2} \cdot \sin \theta = \frac{8 - \sqrt{3}}{4}$$

$$\frac{4\pi}{3}, \frac{5\pi}{3}$$

radians

$$24) 4 = 3 + 2\cos \theta$$

$$\frac{\pi}{3}, \frac{5\pi}{3}$$

radians

$$25) 4 - 8\sin \theta = 8$$

$$\frac{7\pi}{6}, \frac{11\pi}{6}$$

radians

$$26) \frac{-6 - \sqrt{3}}{3} = -2 + \frac{1}{3} \cdot \tan \theta$$

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

radians

$$27) 3 - \frac{1}{5} \cdot \cos \theta = \frac{14}{5}$$

$$0 \text{ radians}$$

$$28) 1 - 6\cos \theta = -2$$

$$\frac{\pi}{3}, \frac{5\pi}{3}$$

radians

$$29) \frac{15 - \sqrt{3}}{5} = 3 - \frac{2}{5} \cdot \cos \theta$$

$$\frac{\pi}{6}, \frac{11\pi}{6}$$

radians

$$30) 5 - 4\sin \theta = 7$$

$$\frac{7\pi}{6}, \frac{11\pi}{6}$$

radians