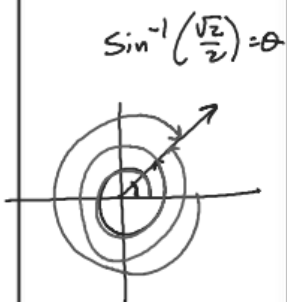


What you'll Learn About



Solve each trigonometric equation for θ on the interval $[0, 2\pi]$. Then give a formula for all possible angles that could be a solution of the equation.

A) $\sin\theta = \frac{\sqrt{2}}{2}$
 $45^\circ, 135^\circ$
 $\frac{\pi}{4}, \frac{3\pi}{4}$

$45^\circ \pm 360k$ $135^\circ \pm 360k$
 $\frac{\pi}{4} \pm 2\pi k$ $\frac{3\pi}{4} \pm 2\pi k$

B) $\cos\theta = \frac{-1}{2}$
 $120^\circ, 240^\circ$
 $\frac{2\pi}{3}, \frac{4\pi}{3}$

$120^\circ \pm 360k$ $240^\circ \pm 360k$
 $\frac{2\pi}{3} \pm 2\pi k$ $\frac{4\pi}{3} \pm 2\pi k$

C) $\sin\theta = 1$
 90°
 $\frac{\pi}{2}$

$90^\circ \pm 360k$
 $\frac{\pi}{2} \pm 2\pi k$

D) $\cos\theta = 0$
 $90^\circ, 270^\circ$
 $\frac{\pi}{2}, \frac{3\pi}{2}$

$90^\circ \pm 360k$ $270^\circ \pm 360k$
 $\frac{\pi}{2} \pm 2\pi k$ $\frac{3\pi}{2} \pm 2\pi k$

E) $\tan\theta = \sqrt{3}$
 $60^\circ, 240^\circ$
 $\frac{\pi}{3}, \frac{4\pi}{3}$

$60^\circ \pm 180k$

F) $\tan\theta = -1$
 $135^\circ, 315^\circ$
 $\frac{3\pi}{4}, \frac{7\pi}{4}$

$135^\circ \pm 180k$

$\frac{3\pi}{4} \pm \pi k$

$\frac{\pi}{3} \pm \pi k$

0,360

$$\cos^{-1} x = \theta$$

$$\cos^{-1} \frac{1}{2} = 2\theta$$

30, 210, 150, 330

Solve each trigonometric equation for θ on the interval $[0, 2\pi]$.

A) $\cos 2\theta = \frac{1}{2}$

$$\frac{2\theta}{2} = \frac{60^\circ \pm 360k}{2}$$

$$\theta = 30 \pm 180k$$

$$\frac{2\theta}{2} = \frac{300 \pm 360k}{2}$$

$$\theta = 150 \pm 180k$$

B) $\sin 3\theta = \frac{1}{2}$

$$\frac{3\theta}{3} = \frac{30 \pm 360k}{3}$$

$$\theta = 10 \pm 120k$$

$$10^\circ, 130^\circ, 250^\circ$$

$$\frac{3\theta}{3} = \frac{150 \pm 360k}{3}$$

$$\theta = 50 \pm 120k$$

$$50^\circ, 170^\circ, 290^\circ$$

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

$$\frac{\theta}{3} = 30 \pm 360k$$

$$\theta = 90 \pm 1080k$$

90

$$\frac{\theta}{3} = 330 \pm 360k$$

$$\theta = 990 \pm 1080k$$

D) $\tan \left(\frac{\theta}{2} + \frac{\pi}{3} \right) = 1$

45

225

$$\frac{\theta}{2} + 60 = 45$$

$$\frac{\theta}{2} = -15 \quad \theta = -30^\circ$$

$$\frac{\theta}{2} + 60 = 225$$

$$2 \left(\frac{\theta}{2} \right) = (165) \cdot 2$$

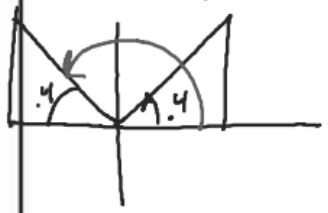
$$\theta = 330^\circ$$

$$\sin \theta = .4$$

$$\sin^{-1} .4 = \theta$$

E) $\sin \theta = .4$

$$\theta = .412, 2.728$$



F) $\cos \theta = -.2$

$$\theta = 1.772, 4.508$$

