

Solving Other Trig Functions - PRACTICE

Solve each equation for $0 \leq \theta < 360$.

1) $\frac{2\sqrt{3}}{3} = -\sec \theta$ PER = 360°

$$-\frac{2\sqrt{3}}{3} = \sec \theta$$

$$-\frac{2\sqrt{3}}{3} = \frac{1}{\cos \theta}$$

$$* \frac{3}{-2\sqrt{3}} = \cos \theta *$$

$$-\frac{\sqrt{3}}{2} = \cos \theta$$

$$\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right) = \theta$$

$$\boxed{150^\circ = \theta}$$

$$360 - 150 = \boxed{210^\circ}$$

2) $-\frac{1}{3} \cdot \sec 3\theta = \frac{2}{3}$ PER = 120°

$$\sec 3\theta = -2$$

$$\frac{1}{\cos 3\theta} = -2$$

$$* \cos 3\theta = -\frac{1}{2} *$$

$$3\theta = \cos^{-1}\left(-\frac{1}{2}\right)$$

$$3\theta = 120^\circ$$

$$\boxed{\theta = 40^\circ}$$

$$120 - 40 = \boxed{80^\circ}$$

$$40^\circ + 120^\circ \rightarrow \boxed{160^\circ}, \boxed{280^\circ}$$

$$80^\circ + 120^\circ \rightarrow \boxed{200^\circ}, \boxed{320^\circ}$$

3) $5 = 3 + \csc \theta$ PER = 360°

$$2 = \csc \theta$$

$$2 = \frac{1}{\sin \theta}$$

$$* \frac{1}{2} = \sin \theta *$$

$$\sin^{-1}\left(\frac{1}{2}\right) = \theta$$

$$\boxed{30^\circ = \theta}$$

$$180 - 30 = \boxed{150^\circ}$$

4) $-3\sqrt{3} = -6\csc -2\theta$ PER = -180°

$$\frac{\sqrt{3}}{2} = \csc -2\theta$$

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

$$\frac{2}{\sqrt{3}} = \sin -2\theta$$

$$\frac{2\sqrt{3}}{3} = \sin -2\theta$$

$$\sin^{-1}\left(\frac{2\sqrt{3}}{3}\right) = -2\theta$$

$$\boxed{\text{NO SOLUTION}}$$

$$5) 3 + \tan \theta = 2 \quad \text{PER} = 180^\circ$$

$$\tan \theta = -1$$

$$\theta = \tan^{-1}(-1)$$

$$\theta = -45^\circ \xrightarrow{+180} \boxed{135^\circ}$$

$$135 + 180 = \boxed{315^\circ}$$

$$6) 4 \tan -2\theta = -4 \quad \text{PER} = -90^\circ$$

$$\tan -2\theta = -1$$

$$-2\theta = \tan^{-1}(-1)$$

$$-2\theta = -45^\circ$$

$$\theta = \boxed{22.5^\circ}$$

$$22.5^\circ + 90^\circ \dots \rightarrow \boxed{112.5^\circ}$$

$$\boxed{202.5^\circ}$$

$$\boxed{292.5^\circ}$$

$$7) -5 + \cot \theta = -6 \quad \text{PER} = 180^\circ$$

$$\cot \theta = -1$$

$$\frac{1}{\tan \theta} = -1$$

$$\tan \theta = \frac{1}{-1}$$

$$\theta = \tan^{-1}(-1)$$

$$\theta = -45^\circ \xrightarrow{+180} \boxed{135^\circ}$$

$$135 + 180 = \boxed{315^\circ}$$

$$8) \frac{1}{4} \cdot \cot -3\theta = -\frac{1}{4} \quad \text{PER} = -60^\circ$$

$$\cot -3\theta = -1$$

$$\frac{1}{\tan -3\theta} = -1$$

$$\tan -3\theta = \frac{1}{-1}$$

$$-3\theta = \tan^{-1}(-1)$$

$$-3\theta = -45^\circ$$

$$\theta = \boxed{15^\circ}$$

$$15^\circ + 60^\circ \dots \rightarrow \boxed{75^\circ}, \boxed{135^\circ}, \boxed{195^\circ},$$

$$\boxed{255^\circ}, \boxed{315^\circ}$$