

Trig Equations w/ Factoring + Fundamental Identities Date _____

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

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

$$\left\{ \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4} \right\}$$

2) $4\sin^2 \theta + 4 = 5$

$$\left\{ \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6} \right\}$$

3) $3\csc^2 \theta = 1 + 2\csc^2 \theta$

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

4) $\sec^2 \theta - 6 = -4$

$$\left\{ \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4} \right\}$$

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

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

6) $\tan \theta \sin \theta - 4\tan \theta = -3\tan \theta$

$$\{0, \pi\}$$

7) $\sqrt{2}\cot \theta - 3\sec \theta = \cot \theta \sec \theta - 3\sec \theta$

$$\left\{ \frac{\pi}{4}, \frac{7\pi}{4} \right\}$$

8) $\sqrt{3}\sec \theta + \sec \theta \cot \theta = 0$

$$\left\{ \frac{5\pi}{6}, \frac{11\pi}{6} \right\}$$

* For all answers, n is any integer

9) $\sin^2 \theta = \sin \theta + 1 - \sin^2 \theta$

$$\begin{aligned} \frac{\pi}{2} + 2\pi n \\ \frac{7\pi}{6} + 2\pi n \\ \frac{11\pi}{6} + 2\pi n \end{aligned}$$

10) $3\sin \theta + 2\sin^2 \theta = -1$

$$\begin{aligned} \frac{3\pi}{2} + 2\pi n \\ \frac{7\pi}{6} + 2\pi n \\ \frac{11\pi}{6} + 2\pi n \end{aligned}$$

11) $\cos^2 \theta = 2 + 2\sin \theta$

$$\frac{3\pi}{2} + 2\pi n$$

12) $\sin^2 \theta + 2 - \cos^2 \theta = 3\sin \theta$

$$\begin{aligned} \frac{\pi}{2} + 2\pi n \\ \frac{\pi}{6} + 2\pi n \\ \frac{5\pi}{6} + 2\pi n \end{aligned}$$

13) $-\cos \theta + \sin \theta = 1$

$$\begin{aligned} \frac{\pi}{2} + 2\pi n \\ \pi + 2\pi n \end{aligned}$$

14) $3\sin \theta = \sqrt{3}\sin \theta + 3\cos \theta + 3\sin \theta$

$$\frac{2\pi}{3} + \pi n$$