

Trig Equations with Grade 11 Identities

- In each of the following, use a substitution for $\tan \theta$ or $\cot \theta$ in order to simplify. Solve the resulting equation for $0 \leq \theta \leq 2\pi$.
 - $2 \cos \theta - \cot \theta = 0$
 - $2 \sin \theta \tan \theta = 5 - \frac{1}{\cos \theta}$
- Solve each of the following for $0 \leq x \leq 2\pi$.
 - $\cos^2 x + \sin x + 1 = 0$
 - $4 \sin^2 x + \sin x + 3 = 6 \cos^2 x$
- Find the points of intersection of the functions $f(x) = \sin^2 x - 3 \cos^2 x$ and $g(x) = 8 \cos x - 4$, $0 \leq x \leq 2\pi$.
- Solve the equation for $-\pi \leq x \leq 2\pi$. $6 \cos x + 5 \tan x = 0$
- Solve the following equation for $0 \leq x \leq 2\pi$. $2 \sin^2 x = 1 - \cos x$.

Ans: 1. a) $\frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{3\pi}{2}$ b) $\frac{\pi}{3}, \frac{5\pi}{3}$ 2. a) $\frac{3\pi}{2}$ b) $3.79^r, 5.64^r, \frac{\pi}{6}, \frac{5\pi}{6}$
3. $\left(\frac{\pi}{3}, 0\right), \left(\frac{5\pi}{3}, 0\right)$ 4. $-2.41^r, -0.73^r, 3.87^r, 5.55^r$ 5. $0, \frac{2\pi}{3}, \frac{4\pi}{3}, 2\pi$