



Assignment 9A.2: More Fund. Identities

Find all the exact solutions to the equation in the interval $[0, 2\pi)$ without using a calculator.

1. $\tan^2 x = 3$

$$\tan x = \pm\sqrt{3}$$

$$x = \tan^{-1}(\pm\sqrt{3})$$

$$x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$$

2. $2 \sin^2 x = 1$

$$x = \frac{\pi}{4} \text{ or } x = \frac{3\pi}{4} \text{ or }$$

$$x = \frac{5\pi}{4}, \frac{7\pi}{4}$$

3. $\sqrt{2} \tan x \cos x - \tan x = 0$

$$x = 0, \pi, \frac{\pi}{4}, \frac{7\pi}{4}$$

4. $\tan x \sin^2 x = \tan x$

$$\tan x \sin^2 x - \tan x = 0$$

$$\tan x (\sin^2 x - 1) = 0$$

$$\tan x = 0, \quad \sin^2 x - 1 = 0$$

$$\sin x = \pm 1$$

$$x = 0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}$$

5. $\sin x \tan^2 x - \sin x = 0$

$$x = 0, \pi, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

Find all the exact solutions to the equation in the interval $[0, 2\pi)$ using quadratic factoring. (No calculator needed).

6. $4 \cos^2 x - 4 \cos x + 1 = 0$

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

8. $\sin^2 t = 2 \sin t$

$$t = 0, \pi$$

7. $2 \sin^2 x + 3 \sin x + 1 = 0$

$$x = \frac{7\pi}{6}, \frac{11\pi}{6}, \frac{3\pi}{2}$$

9. $3 \sin y = 2 \cos^2 y$

$$2 \sin^2 y + 3 \sin y - 2 = 0$$

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