

Name: _____

Solving Trigonometric Equations

Exercise 1: Use the quadratic Formula to solve the equation in the interval $(0, 2\pi)$. Then use a graphing utility to approximate the angle x .

$$1) \quad \frac{12 \sin^2 x - 13 \sin x + 3}{0} = 0 \quad 2) \quad 3 \tan^2 x + 4 \tan x - 4 = 0$$

$$3) \quad \tan^2 x + 3 \tan x + 1 = 0 \quad 4) \quad 4 \cos^2 x - 4 \cos x - 1 = 0$$

Exercise 2: Use inverse function where needed to find all solutions of the equation in the interval $(0, 2\pi)$.

$$1) \quad \tan^2 x - 6 \tan x + 5 = 0 \quad 2) \quad \sec^2 x + \tan x - 3 = 0$$

$$3) \quad 2 \cos^2 x - 5 \cos x + 2 = 0 \quad 4) \quad 2 \sin^2 x - 7 \sin x + 3 = 0$$

Exercise 3: The monthly sales S (in thousands of units) of a seasonal product are approximated by.

$$S = 74.50 + 43.75 \sin \frac{\pi t}{6}$$

Where t is the time (in months), with $t = 1$ corresponding to January. Determine the months when sales exceed 1000,000 units.

Exercise 4: The monthly sales S (in hundreds of units) of skiing equipment at a sports store are approximated by

$$S = 58.3 + 32.5 \cos \frac{\pi t}{6}$$

Where is the time (in months), with $t = 1$ corresponding to January. Determine the months when sales exceed 7500 units.