Section 6.3

Trigonometric Equations II

Squaring Both Sides

Sometimes it's helpful to square both sides of an equation when you have trigonometric functions. This is usually because squared trigonometric functions have a Pythagorean's theorem that lets you convert on trigonometric function to another. Be careful, however, squaring both sides of an equation may lead to extraneous solutions. So we will need to double check if our solutions obtained after square are indeed solutions or not.

Problem 1. Find all possible x in radians where: $\sin x = 1 - \cos x$.

Problem 2. Find all possible x in radians where: $\sin x = \cos x - 1$.

Problem 3. Find all θ over the interval $[0°, 360°)$ where: $\cot\theta + 2\csc\theta = 3$.

Using Trigonometric Identites

Finding the right trigonometric identity may convert the problem into one that you already know how to solve.

Problem 4. Find all θ over the interval $[0°, 360°)$ where: $\sin 2\theta = \sin\theta$.

Problem 5. Find all possible θ in degrees that solves: $4\sin\theta\cos\theta = \sqrt{3}$.

Problem 6. Solve for all θ over the interval $[0, 2\pi)$ that satisfies: $4\cos 2\theta = 8\sin\theta\cos\theta$.