Pre-Calculus:
Sec. 5.5 (Day 1)
Solving Trigonometric Equations Strategies:

1) Need the same angle (argument): ex. x, 2x, 3x, x/2, etc…
2) Try to get the **same function** if it will help.
3) Look for rules/identities.
4) Beware of the "temptation": ex. sin x tan x = sin x

   (Do Not Divide out a trig. function!!!)
5) If you have a **MULTIPLE** angle: ex. 2x, 3x, x/2, etc…

   substitute in **θ**, solve, then substitute back.
6) Graphing calculator. Calculate intersections or zeros, depending on what you input.

Beware!!!

When solving trigonometric equations you sometimes will need to check for **extraneous solutions.**

1) Whenever you square both sides of the equation (or raise both sides to any even # power) check **ALL** solutions. Actually plug each answer into the original equation and check if the value works, for each angle found.

2) If the original equation has tan x, cot x, sec x or csc x (which means any function other than sin x or cos x) ***and*** the answer is a quadrantal angle. Only check the quadrantals because they may be undefined. (You do not need to do this for sin x and cos x because they are never undefined).

1) Find all solutions (also known as general solutions) of the equation, in radians. (No calculator)

$$\sin x = -\frac{\sqrt{3}}{2}$$

2) Find all solutions of the equation, in radians. (No calculator)

$$\tan x = -\frac{\sqrt{3}}{3}$$

3) Find all solutions of the equation, in radians. (No calculator)

$$\sqrt{2}\sin x + 3 = 2$$

4) Solve on the interval $[0, 2\pi)$ (No calculator)

(Also known as principal solutions).

$2 \sin \theta - \csc \theta = 1$

5) Solve on the interval $[0, 2\pi)$. (No calculator)

sin x tan x = sinx

6) Solve on the interval $[0, 2\pi)$. (No calculator)

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

7) Solve: a) For principal solutions on the interval $[0, 2\pi)$.
b) For general solutions.

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

8) Solve: a) For principal solutions on the interval $[0, 2\pi)$.
b) For general solutions.

$$\cos^2 x + 2\sin x = -2$$