Math 4050 **Practice Problem Set #7**

Problem 7.1 Solve the trigonometric equation over all real numbers:

$$2\cos^2(2x) - 11\cos(2x) + 5 = 0$$

Problem 7.2 Solve the trigonometric equation over all real numbers. Express your answer in a form that you would plug into a calculator.

$$\sin 3x = \frac{1}{3}$$

Problem 7.3 Simplify

$$\frac{16(\cos 170^\circ + i \sin 170^\circ)}{2(\cos 50^\circ + i \sin 50^\circ)}$$

Express your answer in rectangular form.

Problem 7.4 Solve the equation

$$\tan 2x = -\sqrt{3}$$

Problem 7.5 Express $-5+12i$ in trigonometric form. Use degree measure (not radians) and express your answer accurate to one decimal place.

Problem 7.6 Find all solutions of

$$\sin x - \sqrt{3}\cos x = -1.$$

Hint: Begin by converting the left-hand side into a single trigonometric function.

Problem 7.7 Use DeMoivre's Theorem to compute $(-1 + i\sqrt{3})^{102}$.

Problem 7.8 Exactly compute

$$[3(\cos 41^\circ + i \sin 41^\circ)]\,[2(\cos 109^\circ + i \sin 109^\circ)]$$

Express your answer in rectangular form.

Problem 7.9 Find all solutions to the equation $z^4 = 3 + 3i$. Express your answers accurate to three decimal places.

Problem 7.10 Solve for x on the interval $[0, 2\pi]$:

$$\sin 2x + \sin 4x = 0$$

Hint: Use a trig identity to get started.