Math 417 Homework 1
Due September 8

Note: In the following problems, be sure to fully justify your arguments. You may use without proof anything covered in class.

1) Determine all values of z for which $|z + i| = |z - 3i|$.

2) Problem 9, page 16 of Churchill and Brown.

3) Problem 13, page 17 of Churchill and Brown.

4) Determine the values of $(1 + \sqrt{3}i)^8$ and $(-1 - i)^{16}$, writing your answers in $x + iy$ form.

5) Determine all cube roots of -4. Express your answers in both polar form and $x + iy$ form.

6) Using the method of completing the square as sometimes used for solving quadratic equations, determine all values of z for which $z^2 - 2iz - (1 + i) = 0$.