

# Math 1513 - College Algebra

## Written Assignment 4 - Due 2012.02.04

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Directions: Please answer the following question in complete sentences. Be sure to label all geometric objects in any illustrations. I will accept an answer in a scanned image format, in a Word document or as a pdf.

Problem: While it is a simple concept for real numbers, the square root of a complex number is much more involved due to interplay between its real and imaginary parts. For  $z = a + bi$  the square root of  $z$  can be found using the formula

$$\sqrt{z} = \frac{1}{\sqrt{2}} \left( \sqrt{|z| + a} \pm i \sqrt{|z| - a} \right),$$

where the sign is chosen to match the sign of  $b$ . Use the formula to find  $\sqrt{z}$  if  $z = 5 + 6i$ .