

Homework 1

MATH 420

Please email me your homework as a pdf file

All work must be shown clearly. You must justify all your answers.

1. Verify that

$$(\sqrt{2} - i) - i(1 - i\sqrt{2}) = -2i$$

2. Solve the quadratic equation $z^2 + z + 1 = 0$.

3. Reduce the following

$$\frac{1 + i2}{3 - i4} + \frac{2 - i}{5i}$$

4. Use properties of conjugates and modulus to show that

$$|(2\bar{z} + 5)(\sqrt{2} - i)| = \sqrt{3}|2z + 5|$$

5. Describe clearly the geometric object determined by the condition

$$|2\bar{z} + i| = 4$$