University of Annaba-Department of Technology

First year undergraduation

2009-2010

Analysis

Supplementary problems

Complex numbers

Exercise 1. Put under the plar form, the following complex numbers:

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 $z_1 = 2 + 3i$

 $z_2 = -3i$

 $z_3 = -\sqrt{6} - i\sqrt{2}$

.

Exercise 2.

1. Find x and y such that

$$3x + 2i - ix + 5y = 7 + 5i. (1)$$

2. Put under the form x + iy

1.

$$\frac{2+i}{2-2i},\tag{2}$$

2.

$$(1+i)^n + (1-i)^n, \ n \in \mathbb{N}.$$
 (3)

Exercise 3. Resolve the following equations:

1.

$$z^3 = -1,$$

2.

$$z^2 = -8 + 6i.$$

Exercise 4. Describe the following sets:

•

$$A = \{ z \in \mathbb{C} : |z+1| \le 1 \} \tag{4}$$

•

$$A = \{ z \in \mathbb{C} : \frac{|z+1|}{|z-1|} = 1 \}$$
 (5)