University of Annaba-Department of Technology
First year undergraduation

## Analysis

## Supplementary problems

## Complex numbers

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

$$
z_{1}=2+3 i
$$

- 

$$
z_{2}=-3 i
$$

- 

$$
z_{3}=-\sqrt{6}-i \sqrt{2}
$$

## Exercise 2.

1. Find $x$ and $y$ such that

$$
\begin{equation*}
3 x+2 i-i x+5 y=7+5 i \tag{1}
\end{equation*}
$$

2. Put under the form $x+i y$
3. 

$$
\begin{equation*}
\frac{2+i}{3-2 i} \tag{2}
\end{equation*}
$$

2. 

$$
\begin{equation*}
(1+i)^{n}+(1-i)^{n}, n \in \mathbb{N} \tag{3}
\end{equation*}
$$

Exercise 3. Resolve the following equations:
1.

$$
z^{3}=-1
$$

2. 

$$
z^{2}=-8+6 i
$$

Exercise 4. Describe the following sets:
-

$$
\begin{equation*}
A=\{z \in \mathbb{C}:|z+1| \leq 1\} \tag{4}
\end{equation*}
$$

- 

$$
\begin{equation*}
A=\left\{z \in \mathbb{C}: \frac{|z+1|}{|z-1|}=1\right\} \tag{5}
\end{equation*}
$$

