

1. Halle la solución de la ecuación  $z^4 - z^2(2i + 3) + 6i$  (10 puntos)

$$\left. \begin{array}{l} z^4 = w^2 \\ z^2 = w \end{array} \right\}$$

$$w^2 - w(2i + 3) + 6i$$

$$w^2 + w(-2i - 3) + 6i \rightarrow (w - 3)(w - 2i) = 0$$

↓

w

w



↓

-2i

-3

$$\Rightarrow (w - 3)(w - 2i) = 0$$

$$w - 3 = 0 \quad \vee \quad w - 2i = 0$$

$$w = 3$$

$$w = 2i$$

$$z^2 = 3$$

$$z^2 = 2i$$

$$z = \pm\sqrt{3}$$

$$z = \pm\sqrt{2i}$$

$$z_1 = \sqrt{3}, \quad z_2 = -\sqrt{3}$$

$$z = \pm\sqrt{2} \cdot \sqrt{i}$$

$$z_3 = \sqrt{2} \left( \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} i \right)$$

$$z_3 = 1 + i$$

$$z_4 = \sqrt{2} \left( -\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} i \right)$$

$$z_4 = -1 + i$$