

Tarea 1

Problema 1

$$|z| = 1$$

$$\operatorname{Im} \left[\frac{z}{(z+1)^2} \right] = 0$$

Problema 2

$$\left| \frac{\alpha + z}{1 + \bar{\alpha}z} \right| \leq 1$$

$$\left| \frac{\alpha + z}{1 + \bar{\alpha}z} \right| > 1$$

$$|\alpha + z| > |1 + \bar{\alpha}z|$$

$$|\alpha + z|^2 > |1 + \bar{\alpha}z|^2$$

$$(\alpha + z)\overline{(\alpha + z)} > (1 + \bar{\alpha}z)\overline{(1 + \bar{\alpha}z)}$$

$$(\alpha + z)(\bar{\alpha} + \bar{z}) > (1 + \bar{\alpha}z)(1 + \alpha\bar{z})$$

$$\alpha\bar{\alpha} + \alpha\bar{z} + z\bar{\alpha} + z\bar{z} > 1 + \alpha\bar{z} + \bar{\alpha}z + |\alpha z|$$

Problema 3

$$z = \frac{1+i}{\sqrt{2}}$$

$$z^{n^2} = e^{i\theta/\phi}$$

$$\frac{1}{z^{n^2}}$$

$$36$$

Problema 4

$$|1 + ab| + |a + b| \geq \sqrt{|a^2 - 1| \cdot |b^2 - 1|}$$

$$|1 + ab| + |a + b| \geq \dots$$

$$|1 + ab| + |-a - b| \geq \dots$$