



TEMA: Potenciación y radicación con números complejos

APORTE: DEBER

FECHA:

CURSO: 3 BGU

Determine las siguientes potencias de los números complejos:

1. $Z_1^2 = (\cos 30^\circ + i \sin 30^\circ)^2$

$$Z_1 = 1^2 (\cos (2 * 30^\circ) + i \sin (2 * 30^\circ))$$

$$Z_1 = _ (\cos _ + i \sin _)$$

2. $Z_2^4 = [2(\cos 75^\circ + i \sin 75^\circ)]^4$

$$Z_2 = 2^4 (\cos (4 * 75^\circ) + i \sin (4 * 75^\circ))$$

$$Z_2 = _ (\cos _ + i \sin _)$$

Determine las raíces de los siguientes números complejos:

3. $\sqrt[2]{Z} = \sqrt[2]{81(\cos 30^\circ + i \sin 30^\circ)}$

$$Z_0 = \sqrt[2]{81} \left(\cos \left(\frac{30 + 360 * 0}{2} \right) + i \sin \left(\frac{30 + 360 * 0}{2} \right) \right)$$

$$Z_0 = _ (\cos _ + i \sin _)$$

$$Z_1 = \sqrt[2]{81} \left(\cos \left(\frac{30 + 360 * 1}{2} \right) + i \sin \left(\frac{30 + 360 * 1}{2} \right) \right)$$

$$Z_1 = _ (\cos _ + i \sin _)$$

4. $\sqrt[3]{Z} = \sqrt[3]{64(\cos 45^\circ + i \sin 45^\circ)}$

$$Z_0 = \sqrt[3]{64} \left(\cos \left(\frac{45 + 360 * 0}{3} \right) + i \sin \left(\frac{45 + 360 * 0}{3} \right) \right)$$

$$Z_0 = _ (\cos _ + i \sin _)$$

$$Z_1 = \sqrt[3]{64} \left(\cos \left(\frac{45 + 360 * 1}{3} \right) + i \sin \left(\frac{45 + 360 * 1}{3} \right) \right)$$

$$Z_1 = _ (\cos _ + i \sin _)$$

$$Z_2 = \sqrt[3]{64} \left(\cos \left(\frac{45 + 360 * 2}{3} \right) + i \sin \left(\frac{45 + 360 * 2}{3} \right) \right)$$



$$Z_2 = _(\cos_ + i\sen_)$$

5. $\sqrt[4]{Z} = \sqrt[4]{2401}(\cos 60^\circ + i \sen 60^\circ)$

$$Z_0 = \sqrt[4]{2401} \left(\cos \left(\frac{60 + 360 * 0}{4} \right) + i\sen \left(\frac{60 + 360 * 0}{4} \right) \right)$$

$$Z_0 = _(\cos_ + i\sen_)$$

$$Z_1 = \sqrt[4]{2401} \left(\cos \left(\frac{60 + 360 * 1}{4} \right) + i\sen \left(\frac{60 + 360 * 1}{4} \right) \right)$$

$$Z_1 = _(\cos_ + i\sen_)$$

$$Z_2 = \sqrt[4]{2401} \left(\cos \left(\frac{60 + 360 * 2}{4} \right) + i\sen \left(\frac{60 + 360 * 2}{4} \right) \right)$$

$$Z_2 = _(\cos_ + i\sen_)$$

$$Z_3 = \sqrt[4]{2401} \left(\cos \left(\frac{60 + 360 * 3}{4} \right) + i\sen \left(\frac{60 + 360 * 3}{4} \right) \right)$$

$$Z_3 = _(\cos_ + i\sen_)$$