

APORTE: _____ TEMA: _____ FECHA: _____

NOMBRE: _____

Calcule los productos:

1. $Z_1 = 2 \left[\cos \frac{\pi}{6} + i \operatorname{sen} \frac{\pi}{6} \right]$ y $Z_2 = 3 \left[\cos \frac{\pi}{6} + i \operatorname{sen} \frac{\pi}{6} \right]$

- a. $Z_1 \cdot Z_2 = \frac{3}{2} \left[\cos \left(\frac{\pi}{3} \right) + i \operatorname{sen} \left(\frac{\pi}{3} \right) \right]$
- b. $Z_1 \cdot Z_2 = \frac{3}{2} \left[i \cos \left(\frac{\pi}{3} \right) + \operatorname{sen} \left(\frac{\pi}{3} \right) \right]$
- c. $Z_1 \cdot Z_2 = 6 \left[\cos \left(\frac{\pi}{3} \right) + i \operatorname{sen} \left(\frac{\pi}{3} \right) \right]$
- d. $Z_1 \cdot Z_2 = 6 \left[i \cos \left(\frac{\pi}{3} \right) + \operatorname{sen} \left(\frac{\pi}{3} \right) \right]$

2. $Z_1 = 2 \left[\cos \frac{\pi}{6} + i \operatorname{sen} \frac{\pi}{6} \right]$ y $Z_2 = 3 \left[\cos \frac{\pi}{4} + i \operatorname{sen} \frac{\pi}{4} \right]$

- a. $Z_1 \cdot Z_2 = \frac{3}{2} \left[\cos \left(\frac{\pi}{3} \right) + i \operatorname{sen} \left(\frac{\pi}{3} \right) \right]$
- b. $Z_1 \cdot Z_2 = \frac{2}{3} \left[\cos \left(\frac{5\pi}{3} \right) + i \operatorname{sen} \left(\frac{5\pi}{3} \right) \right]$
- c. $Z_1 \cdot Z_2 = 6 \left[i \cos \left(\frac{5\pi}{12} \right) + \operatorname{sen} \left(\frac{5\pi}{12} \right) \right]$
- d. $Z_1 \cdot Z_2 = 6 \left[\cos \left(\frac{5\pi}{12} \right) + i \operatorname{sen} \left(\frac{5\pi}{12} \right) \right]$

3. $Z_1 = \left[\cos \frac{\pi}{6} + i \operatorname{sen} \frac{\pi}{6} \right]$ y $Z_2 = \left[\cos \frac{\pi}{12} + i \operatorname{sen} \frac{\pi}{12} \right]$

- a. $Z_1 \cdot Z_2 = 1 \left[\cos \left(\frac{3\pi}{12} \right) + i \operatorname{sen} \left(\frac{3\pi}{12} \right) \right]$
- b. $Z_1 \cdot Z_2 = 1 \left[\cos \left(\frac{3\pi}{6} \right) + i \operatorname{sen} \left(\frac{3\pi}{6} \right) \right]$
- c. $Z_1 \cdot Z_2 = 1 \left[\cos \left(\frac{2\pi}{12} \right) + i \operatorname{sen} \left(\frac{2\pi}{12} \right) \right]$
- d. $Z_1 \cdot Z_2 = 1 \left[\cos \left(\frac{5\pi}{12} \right) + i \operatorname{sen} \left(\frac{5\pi}{12} \right) \right]$

Determine los respectivos cocientes:

4. $Z_1 = [\cos 40^\circ + i \operatorname{sen} 40^\circ]$ y $Z_2 = [\cos 50^\circ + i \operatorname{sen} 50^\circ]$

- a. $\frac{Z_1}{Z_2} = \frac{3}{5} [\cos(-10^\circ) + i \operatorname{sen}(-10^\circ)]$
- b. $\frac{Z_1}{Z_2} = [\cos(-10^\circ) + i \operatorname{sen}(-10^\circ)]$
- c. $\frac{Z_1}{Z_2} = \frac{3}{5} [i \cos(-10^\circ) + i \operatorname{sen}(-10^\circ)]$
- d. $\frac{Z_1}{Z_2} = [i \cos(-10^\circ) + i \operatorname{sen}(-10^\circ)]$

5. $Z_1 = 2[\cos 60^\circ + i \operatorname{sen} 60^\circ]$ y $Z_2 = [\cos 45^\circ + i \operatorname{sen} 45^\circ]$

- a. $\frac{Z_1}{Z_2} = 2[\cos(105^\circ) + i \operatorname{sen}(105^\circ)]$
- b. $\frac{Z_1}{Z_2} = \frac{1}{2}[\cos(10^\circ) + i \operatorname{sen}(10^\circ)]$
- c. $\frac{Z_1}{Z_2} = 2[\cos(15^\circ) + i \operatorname{sen}(15^\circ)]$
- d. $\frac{Z_1}{Z_2} = 2[i \cos(15^\circ) + i \operatorname{sen}(15^\circ)]$