



## Exercícios: Operações na forma trigonométrica

Expresse na forma trigonométrica o produto  $z_1 z_2$ :

1.

$$z_1 = 3 \left( \cos \frac{\pi}{5} + i \operatorname{sen} \frac{\pi}{5} \right)$$

$$z_2 = 4 \left( \cos \frac{2\pi}{5} + i \operatorname{sen} \frac{2\pi}{5} \right)$$

2.

$$z_1 = 6 \left( \cos \frac{3\pi}{10} + i \operatorname{sen} \frac{3\pi}{10} \right)$$

$$z_2 = 5 \left( \cos \frac{2\pi}{10} + i \operatorname{sen} \frac{2\pi}{10} \right)$$

3.

$$z_1 = 5(\cos 30^\circ + i \operatorname{sen} 30^\circ)$$

$$z_2 = 2(\cos 60^\circ + i \operatorname{sen} 60^\circ)$$

4. Calcule  $z_1 z_2 z_3$ , sendo dados:

$$z_1 = 2 \left( \cos \frac{\pi}{5} + i \operatorname{sen} \frac{\pi}{5} \right); z_2 = \sqrt{3} \left( \cos \frac{3\pi}{5} + i \operatorname{sen} \frac{3\pi}{5} \right)$$

$$\text{e } z_3 = 2\sqrt{3} \left( \cos \frac{6\pi}{5} + i \operatorname{sen} \frac{6\pi}{5} \right).$$

Dado  $z = \sqrt{2} \left( \cos \frac{\pi}{4} + i \operatorname{sen} \frac{\pi}{4} \right)$ , calcule as potências:

5.  $z^2 =$

6.  $z^5 =$

Calcule:

7.  $(1 + i)^8 =$

8.  $(-1 + \sqrt{3}i)^3 =$

Dados:

$$Z = 6 \left( \cos \frac{5\pi}{6} + i \operatorname{sen} \frac{5\pi}{6} \right); W = 3 \left( \cos \frac{\pi}{4} + i \operatorname{sen} \frac{\pi}{4} \right)$$

Calcule:

9.  $\frac{Z}{W}$

10.  $\frac{W}{Z}$

Gabarito:

1.  $12 \left( \cos \frac{3\pi}{5} + i \operatorname{sen} \frac{3\pi}{5} \right)$

2.  $30 \left( \cos \frac{\pi}{2} + i \operatorname{sen} \frac{\pi}{2} \right)$

3.  $10i$

4.  $12$

5.  $2i$

6.  $-4 - 4i$

7.  $16$

8.  $8$

9.

$$2 \left( \cos \frac{7\pi}{12} + i \operatorname{sen} \frac{7\pi}{12} \right)$$

10.

$$\frac{1}{2} \left( \cos \frac{17\pi}{12} + i \operatorname{sen} \frac{17\pi}{12} \right)$$