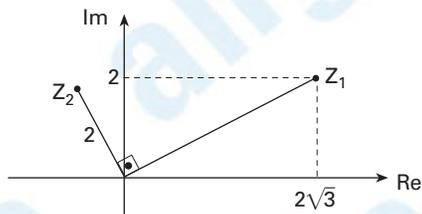


Questão 15

A figura indica a representação dos números Z_1 e Z_2 no plano complexo.

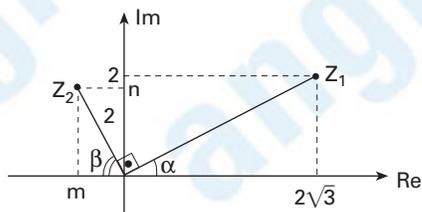


Se $Z_1 \cdot Z_2 = a + bi$, então $a + b$ é igual a

- A) $4(1 - \sqrt{3})$.
- B) $2(\sqrt{3} - 1)$.
- C) $2(1 + \sqrt{3})$.
- D) $8(\sqrt{3} - 1)$.
- E) $4(\sqrt{3} + 1)$.

Resolução

Considere a figura seguinte:



- (1) $\text{tg} \alpha = \frac{2}{2\sqrt{3}} \therefore \text{tg} \alpha = \frac{\sqrt{3}}{3} \therefore \alpha = 30^\circ$
- (2) $\alpha + \beta = 90^\circ \therefore \beta = 60^\circ$
- (3) $\frac{-m}{2} = \cos \beta \therefore \frac{-m}{2} = \frac{1}{2} \therefore m = -1$
- (4) $\frac{n}{2} = \text{sen} \beta \therefore \frac{n}{2} = \frac{\sqrt{3}}{2} \therefore n = \sqrt{3}$

Logo, $Z_1 = 2\sqrt{3} + 2i$ e $Z_2 = -1 + \sqrt{3}i$

$$Z_1 \cdot Z_2 = (2\sqrt{3} + 2i)(-1 + \sqrt{3}i)$$

$$Z_1 \cdot Z_2 = -4\sqrt{3} + 4i$$

$$\therefore a = -4\sqrt{3} \text{ e } b = 4$$

$$a + b = -4\sqrt{3} + 4$$

$$a + b = 4(1 - \sqrt{3})$$

Resposta: A