

Arco Duplo

Prof. Dé
Matemática

Arco Duplo

Como calcular $\text{sen}(2x)$, $\text{cos}(2x)$ e $\text{tg}(2x)$?

$$\text{sen}(x+x) = \text{sen } x \cdot \text{cos } x + \text{sen } x \cdot \text{cos } x$$

$$\text{sen}(2x) = 2 \cdot \text{sen } x \cdot \text{cos } x$$

$$\text{cos}(x+x) = \text{cos } x \cdot \text{cos } x - \text{sen } x \cdot \text{sen } x$$

$$\text{cos}(2x) = \text{cos}^2 x - \text{sen}^2 x$$

$$\text{tg}(x+x) = \frac{\text{tg } x + \text{tg } x}{1 - \text{tg } x \cdot \text{tg } x}$$

$$\text{tg}(2x) = \frac{2 \cdot \text{tg } x}{1 - \text{tg}^2 x}$$

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$$\text{sen}(2x) = 2.\text{sen}x.\text{cos}x$$

$$\text{cos}(2x) = \text{cos}^2 x - \text{sen}^2 x$$

$$\text{tg}(2x) = \frac{2.\text{tg}x}{1 - \text{tg}^2 x}$$

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Considere: $\text{sen } x - \text{cos } x = \sqrt{a}$, com $a > 0$.

Logo, $\text{sen } 2x$ é igual a:

a. $1 - a$

b. $a - 1$

c. a

d. $a + 1$

e. $2a$

$$(\text{Sen}x - \text{cos}x)^2 = (\sqrt{a})^2$$

$$\text{sen}^2x - 2\text{sen}x.\text{cos}x + \text{cos}^2x = a$$

$$1 - 2\text{sen}x.\text{cos}x = a$$

$$1 - a = 2\text{sen}x.\text{cos}x$$

$$\text{Sen}2x = 1 - a$$


$$\text{sen}^2x + \text{cos}^2x = 1$$


$$\text{sen}2x = 2.\text{sen}x.\text{cos}x$$

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$$x = 22^{\circ} 30'$$

Encontre o valor de $(\text{sen } 22^{\circ} 30' + \text{cos } 22^{\circ} 30')^2$

$$(\text{sen } 22^{\circ} 30' + \text{cos } 22^{\circ} 30')^2$$

$$(\text{sen}x + \text{cos}x)^2$$

$$\text{sen}^2x - 2\text{sen}x.\text{cos}x + \text{cos}^2x$$

$$1 - 2\text{sen}x.\text{cos}x$$

$$1 - \text{sen}2x$$

$$1 - \text{sen}2(22^{\circ}30')$$


$$\text{sen}^2x + \text{cos}^2x = 1 \quad x = 22^{\circ} 30'$$

$$1 - \text{sen}45^{\circ} = 1 - \frac{\sqrt{2}}{2}$$

$$(\text{sen } 22^{\circ} 30' + \text{cos } 22^{\circ} 30')^2 = \frac{2 - \sqrt{2}}{2}$$

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(UFSC) Na figura a seguir determine a medida do segmento AB , em cm , sabendo que $\text{sen } a = 0,6$.

