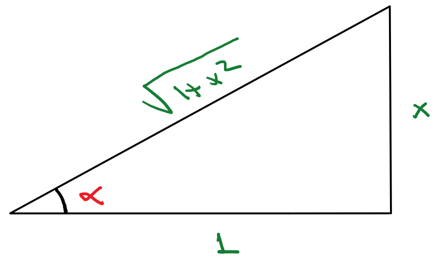
Simplificaciones trigonométricas

viernes, 17 de noviembre de 2023 9:12



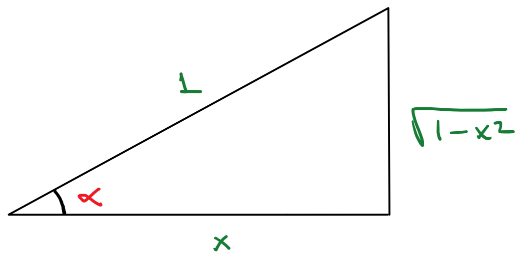
$$tg(\alpha) = \frac{x}{1} = x \longleftrightarrow \alpha = arctg(x)$$

$$sen(\alpha) = \frac{x}{\sqrt{1+x^2}} \longleftrightarrow \alpha = arcsen\left(\frac{x}{\sqrt{1+x^2}}\right)$$

$$cos(\alpha) = \frac{1}{\sqrt{1+x^2}} \longleftrightarrow \alpha = arccos\left(\frac{1}{\sqrt{1+x^2}}\right)$$

$$sen(2 \cdot arctg(x)) = sen(arctg(x) + arctg(x)) = 2 \cdot sen(arctg(x)) \cdot cos(arctg(x)) =$$

$$= 2 \cdot sen(\alpha) \cdot cos(\alpha) = 2 \cdot \frac{x}{\sqrt{1+x^2}} \cdot \frac{1}{\sqrt{1+x^2}} = \frac{2x}{1+x^2}$$

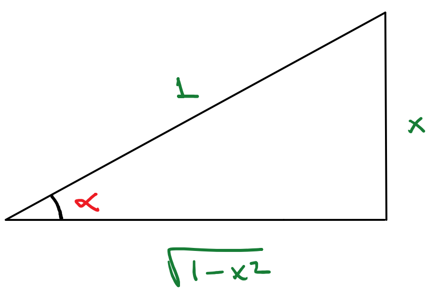


$$cos(\alpha) = \frac{x}{1} = x \longleftrightarrow \alpha = arccos(x)$$

$$sen(\alpha) = \frac{\sqrt{1-x^2}}{1} = \sqrt{1-x^2} \longleftrightarrow \alpha = arcsen\left(\sqrt{1-x^2}\right)$$

$$tg(\alpha) = \frac{\sqrt{1-x^2}}{x} \longleftrightarrow \alpha = arctg\left(\frac{\sqrt{1-x^2}}{x}\right)$$

$$tg(arccos(x)) = tg(\alpha) = \frac{\sqrt{1-x^2}}{x}$$



$$sen(\alpha) = \frac{x}{1} = x \longleftrightarrow \alpha = arcsen(x)$$

$$cos(\alpha) = \frac{\sqrt{1-x^2}}{1} = \sqrt{1-x^2} \longleftrightarrow \alpha = arccos\left(\sqrt{1-x^2}\right)$$

$$tg(\alpha) = \frac{x}{\sqrt{1-x^2}} \longleftrightarrow \alpha = arctg\left(\frac{x}{\sqrt{1-x^2}}\right)$$

$$cos(2\, arcsen(x)) = cos(arcsen(x) + arcsen(x)) = cos^2(arcsen(x)) - sen^2(arcsen(x)) =$$

$$= cos^2(\alpha) - sen^2(\alpha) = (\cancel{\sqrt{\ }}1-x^2)^{\cancel{2}} - (x)^2 = 1 - 2x^2$$