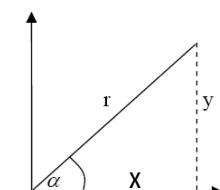


Rangkuman Trigonometri [part 2]

Pengertian Sinus, Cosinus, Tangen



$$\sin \alpha = \frac{y}{r} \Rightarrow y = r \cdot \sin \alpha$$

$$\cos \alpha = \frac{x}{r} \Rightarrow x = r \cdot \cos \alpha$$

$$\tan \alpha = \frac{y}{x}$$

$$r^2 = x^2 + y^2$$

$$\Leftrightarrow r^2 = (r \cdot \cos \alpha)^2 + (r \cdot \sin \alpha)^2$$

$$\Leftrightarrow r^2 = (r^2 \cos^2 \alpha) + (r^2 \sin^2 \alpha) \text{ (semua dibagi } r^2)$$

$$\Leftrightarrow 1 = \cos^2 \alpha + \sin^2 \alpha$$

Hubungan Fungsi Trigonometri

$$1. \sin^2 \alpha + \cos^2 \alpha = 1$$

$$2. \tan \alpha = \frac{\sin \alpha}{\cos \alpha}$$

$$3. \sec \alpha = \frac{1}{\cos \alpha}$$

$$4. \csc \alpha = \frac{1}{\sin \alpha}$$

$$5. \cotan \alpha = \frac{\cos \alpha}{\sin \alpha}$$

$$6. \tan^2 \alpha + 1 = \sec^2 \alpha \Rightarrow \sin^2 \alpha + \cos^2 \alpha = 1$$

$$\Rightarrow \frac{\sin^2 \alpha}{\cos^2 \alpha} + \frac{\cos^2 \alpha}{\cos^2 \alpha} = \frac{1}{\cos^2 \alpha}$$

$$\Rightarrow \tan^2 \alpha + 1 = \sec^2 \alpha \rightarrow \text{bukti}$$

Rumus-rumus Penjumlahan dan Pengurangan :

$$1. \sin(A+B) = \sin A \cos B + \cos A \sin B$$

$$2. \sin(A-B) = \sin A \cos B - \cos A \sin B$$

$$3. \cos(A+B) = \cos A \cos B - \sin A \sin B$$

$$4. \cos(A-B) = \cos A \cos B + \sin A \sin B$$

$$5. \tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \cdot \tan B}$$

$$6. \tan(A-B) = \frac{\tan A - \tan B}{1 + \tan A \cdot \tan B}$$

Rumus-rumus Sudut Rangkap :

$$1. \sin 2A = 2 \sin A \cos A$$

$$2. \cos 2A = \cos^2 A - \sin^2 A$$

$$3. \tan 2A = \frac{2 \tan A}{1 - (\tan A)^2}$$

Rumus Jumlah Fungsi :

Jumlah/selisih \rightarrow perkalian

$$1. \sin A + \sin B = 2 \sin \frac{1}{2}(A+B) \cos \frac{1}{2}(A-B)$$

Perkalian \rightarrow jumlah/selisih

$$1. 2 \sin A \cos B = \sin(A+B) + \sin(A-B)$$

$$2. 2 \cos A \sin B = \sin(A+B) - \sin(A-B)$$

$$3. 2 \cos A \cos B = \cos(A+B) + \cos(A-B)$$

$$4. -2 \sin A \sin B = \cos(A+B) - \cos(A-B)$$

$$2. \sin A - \sin B = 2 \cos \frac{1}{2}(A+B) \sin \frac{1}{2}(A-B)$$

$$3. \cos A + \cos B = 2 \cos \frac{1}{2}(A+B) \cos \frac{1}{2}(A-B)$$

Persamaan Trigonometri Sederhana :

Rumus umum penyelesaian persamaan trigonometri adalah :

$$* \sin x = \sin \alpha, \text{ maka } x_1 = \alpha + k \cdot 360^\circ$$

$$x_2 = (180^\circ - \alpha) + k \cdot 360^\circ$$

$$* \cos x = \cos \alpha, \text{ maka } x_{1,2} = \pm \alpha + k \cdot 360^\circ$$

$$* \tan x = \tan \alpha, \text{ maka } x = \alpha + k \cdot 180^\circ$$