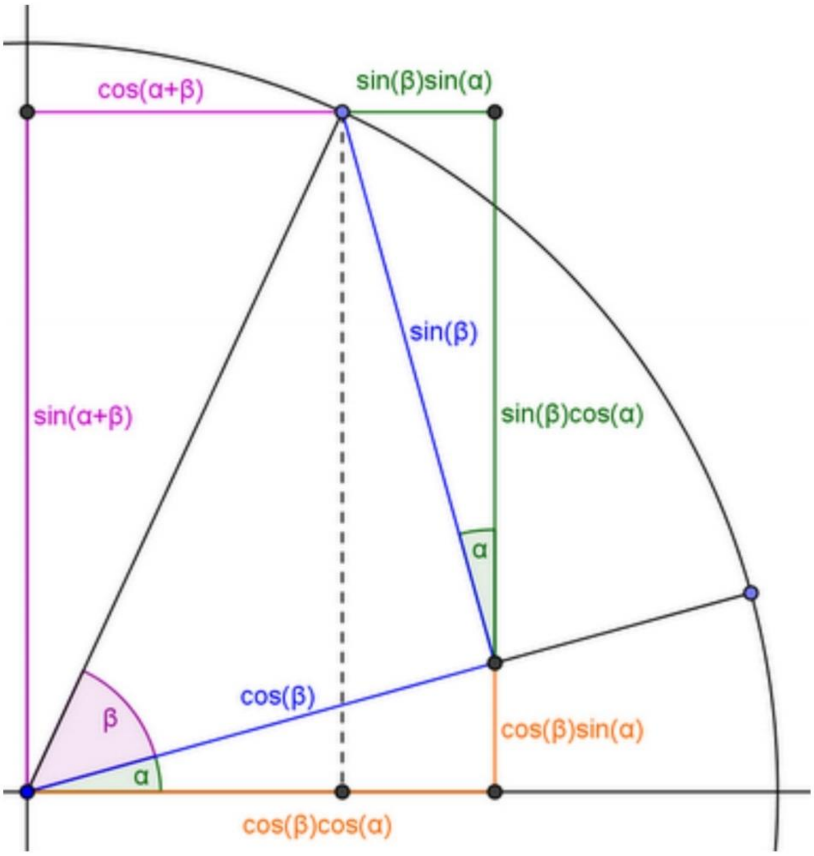
20/10/2022



$$\sin(\alpha+\beta) = \sin(\alpha)\cos(\beta) + \cos(\alpha)\sin(\beta),$$
$$\cos(\alpha+\beta) = \cos(\alpha)\cos(\beta) - \sin(\alpha)\sin(\beta).$$

$$\Downarrow$$

$$\sin(\alpha-\beta) = \sin\alpha\cos\beta - \cos\alpha\sin\beta$$
$$\cos(\alpha-\beta) = \cos\alpha\cos\beta + \sin\alpha\sin\beta$$

ESEMPI

- $\cos 75^\circ = \cos(30^\circ + 45^\circ) = \cos 30^\circ \cos 45^\circ - \sin 30^\circ \sin 45^\circ =$
  $= \frac{\sqrt{3}}{2}\cdot\frac{\sqrt{2}}{2} - \frac{1}{2}\cdot\frac{\sqrt{2}}{2} = \frac{\sqrt{6}-\sqrt{2}}{4}$

- $\sin 15^\circ = \sin(45^\circ - 30^\circ) = \sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ =$
  $= \frac{\sqrt{2}}{2}\cdot\frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2}\cdot\frac{1}{2} = \frac{\sqrt{6}-\sqrt{2}}{4}$

infatti $\sin 15^\circ = \sin(90^\circ - 75^\circ) = \cos 75^\circ$

$\tan(\alpha+\beta) = ?$ $\qquad \alpha+\beta \neq \frac{\pi}{2}+k\pi$

$$\tan(\alpha+\beta) = \frac{\sin(\alpha+\beta)}{\cos(\alpha+\beta)} = \frac{\sin\alpha\cos\beta + \cos\alpha\sin\beta}{\cos\alpha\cos\beta - \sin\alpha\sin\beta} =$$

$$= \frac{\dfrac{\sin\alpha\cancel{\cos\beta}}{\cos\alpha\cancel{\cos\beta}} + \dfrac{\cancel{\cos\alpha}\sin\beta}{\cancel{\cos\alpha}\cos\beta}}{\dfrac{\cancel{\cos\alpha\cos\beta}}{\cancel{\cos\alpha\cos\beta}} - \dfrac{\sin\alpha}{\cos\alpha}\dfrac{\sin\beta}{\cos\beta}} = \frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$$

$\cos\alpha \neq 0 \qquad \alpha \neq \frac{\pi}{2}+k\pi$

$\cos\beta \neq 0 \qquad \beta \neq \frac{\pi}{2}+k\pi$

$$\tan(\alpha+\beta) = \frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta} \qquad \alpha+\beta,\ \alpha,\ \beta \neq \frac{\pi}{2}+k\pi$$

$$\tan(\alpha-\beta) = \frac{\tan\alpha-\tan\beta}{1+\tan\alpha\tan\beta} \qquad \alpha-\beta,\ \alpha,\ \beta \neq \frac{\pi}{2}+k\pi$$

$\tan(\alpha+(-\beta))$

19 $\cos\left(\frac{5}{6}\pi + \alpha\right) - \sin\left(\frac{\pi}{3} - \alpha\right) =$ $[-\sqrt{3}\cos\alpha]$

$$= \cos\frac{5}{6}\pi\cos\alpha - \sin\frac{5}{6}\pi\sin\alpha - \left[\sin\frac{\pi}{3}\cos\alpha - \cos\frac{\pi}{3}\sin\alpha\right] =$$

$$= -\frac{\sqrt{3}}{2}\cdot\cos\alpha - \cancel{\frac{1}{2}\sin\alpha} - \frac{\sqrt{3}}{2}\cos\alpha + \cancel{\frac{1}{2}\sin\alpha} = -\sqrt{3}\cos\alpha$$

60 $\sin\left(\frac{\pi}{3} + \arccos\frac{4}{5}\right) =$ $\left[\frac{4\sqrt{3}+3}{10}\right]$

$$= \sin\frac{\pi}{3}\cos\left(\arccos\frac{4}{5}\right) + \cos\frac{\pi}{3}\sin\left(\arccos\frac{4}{5}\right) =$$

$$= \frac{\sqrt{3}}{\cancel{2}_{1}}\cdot\frac{\cancel{4}^{2}}{5} + \frac{1}{2}\cdot\sin\left(\arccos\frac{4}{5}\right) =$$

$$= \frac{2\sqrt{3}}{5} + \frac{1}{2}\sqrt{1-\cos^2\left(\arccos\frac{4}{5}\right)} = \frac{2\sqrt{3}}{5} + \frac{1}{2}\sqrt{1-\left(\frac{4}{5}\right)^2} =$$

$$= \frac{2\sqrt{3}}{5} + \frac{1}{2}\sqrt{\frac{25-16}{25}} = \frac{2\sqrt{3}}{5} + \frac{1}{2}\cdot\frac{3}{5} = \boxed{\frac{4\sqrt{3}+3}{10}}$$