FORMULE DI DUPLICAZIONE

$$\sin 2\alpha = 2 \sin\alpha \cos\alpha \qquad \tan 2\alpha = \frac{2\tan\alpha}{1-\tan^2\alpha}$$

$$\cos 2\alpha = \cos^2\alpha - \sin^2\alpha$$

$$= 2\cos^2\alpha - 1$$

$$= 1 - 2\sin^2\alpha$$

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

160 $\cos\left(\overbrace{2\arccos\frac{1}{4}}^{\alpha}\right) =$ $\left[-\frac{7}{8}\right]$

applico $\cos 2\alpha = 2\cos^2\alpha - 1$

$$= 2\cos^2\left(\arccos\frac{1}{4}\right) - 1 = 2\left(\frac{1}{4}\right)^2 - 1 = 2\cdot\frac{1}{16} - 1 = \frac{1}{8} - 1 = -\frac{7}{8}$$

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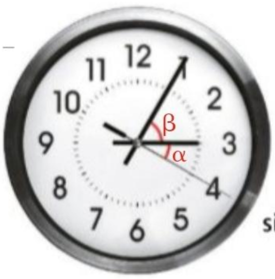

$\sin\alpha = \frac{1}{2}$

Determina $\cos\beta$ e $\tan\beta$. $\left[\frac{1}{2}; \sqrt{3}\right]$

$$\alpha + \beta = \frac{\pi}{2}$$

$$\cos\beta = \cos\left(\frac{\pi}{2} - \alpha\right) = \sin\alpha = \frac{1}{2}$$

$$\sin\beta = \sqrt{1-\cos^2\beta} = \sqrt{1-\frac{1}{4}} = \frac{\sqrt{3}}{2}$$

$$\tan\beta = \frac{\sin\beta}{\cos\beta} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$

$$\alpha = \frac{\pi}{6} \qquad \beta = \frac{\pi}{3}$$

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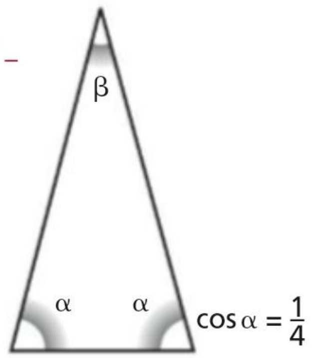

Calcola sin β e cos β. $\left[\frac{\sqrt{15}}{8}; \frac{7}{8}\right]$

$2\alpha + \beta = \pi$

$\beta = \pi - 2\alpha$

$\sin\beta = \sin(\pi - 2\alpha) = \sin 2\alpha = 2\sin\alpha\cos\alpha = 2\sqrt{1-\cos^2\alpha}\cdot\cos\alpha =$

$= 2\sqrt{1-\frac{1}{16}}\cdot\frac{1}{4} = \cancel{2}\,\frac{\sqrt{15}}{\cancel{4}_{2}}\cdot\frac{1}{4} = \frac{\sqrt{15}}{8}$

$\cos\beta = \cos(\pi - 2\alpha) = -\cos 2\alpha = -(2\cos^2\alpha - 1) =$

$= -2\cdot\frac{1}{16} + 1 = -\frac{1}{8} + 1 = \frac{7}{8}$