

## Answer on Question #63371-Math-Trigonometry

$\cos\alpha = \frac{\sqrt{3}}{2}$  and  $270^\circ < \alpha < 360^\circ$ . Find: a)  $\sin\alpha$ , b)  $\operatorname{tg}\alpha$ , c)  $\operatorname{cotg}\alpha$

**Solution.**

**a)  $\sin\alpha$ .**

Find out the basic trigonometric identities

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

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

$$\sin\alpha = \pm\sqrt{1 - \cos^2\alpha},$$

$$270^\circ < \alpha < 360^\circ, \alpha \in \text{IV}, \sin\alpha < 0$$

$$\sin\alpha = -\sqrt{1 - \cos^2\alpha} = -\sqrt{1 - \left(\frac{\sqrt{3}}{2}\right)^2} = -\sqrt{1 - \frac{3}{4}} = -\sqrt{\frac{1}{4}} = -\frac{1}{2}$$

**Answer:**  $-\frac{1}{2}$

**b)  $\operatorname{tg}\alpha$ .**

$$\operatorname{tg}\alpha = \frac{\sin\alpha}{\cos\alpha} = -\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}.$$

**Answer:**  $-\frac{1}{\sqrt{3}}$

**Find: c)  $\operatorname{cotg}\alpha$ .**

$$\operatorname{cotg}\alpha = \frac{1}{\operatorname{tg}\alpha} = -\frac{1}{\frac{1}{\sqrt{3}}} = -\sqrt{3}.$$

**Answer:**  $-\sqrt{3}$ .