سید محمد لواسانی

(۱)

$$\tan\frac{2\pi}{3} + \sin\frac{7\pi}{3}\cos\frac{5\pi}{3} = -1 + \frac{\sqrt{3}}{2}\times\frac{1}{2} = \frac{-1}{2}$$

$$\tan\frac{9\pi}{4}\times\sin\frac{5\pi}{3} + \cos\frac{29\pi}{3} = 1\times\frac{-\sqrt{3}}{2} + \frac{1}{2} = 0$$

(۲)

$$\cot\alpha = 3$$

$$3^2 + 1^2 = 10$$

$$\sin\alpha = \frac{1}{\sqrt{10}}$$

$$\cos\alpha = \frac{3}{\sqrt{10}}$$

(۳)

$$\frac{\frac{11}{\sqrt{10}} - \frac{1}{\sqrt{10}}}{\frac{6}{\sqrt{10}} + \frac{1}{\sqrt{10}}} = \frac{\frac{10}{\sqrt{10}}}{\frac{5}{\sqrt{10}}} = 2$$

(۴)

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

$$(2\cos\alpha)^2 + \cos^2\alpha = 1 \Rightarrow 4\cos^2\alpha + \cos^2\alpha = 1 \Rightarrow \cos^2\alpha = \frac{1}{5}$$

$\cos\alpha = -\frac{1}{\sqrt{5}}$

$\frac{\sqrt{2}}{2} \times \frac{\sqrt{98}}{10} + \frac{-1}{2} \times \frac{\sqrt{2}}{10}$

$\cos\frac{11\pi}{4} \times \cos\alpha + \sin\frac{11\pi}{4} \times \sin\alpha$

از

$\sin\alpha = \frac{\sqrt{2}}{10} \rightarrow -\frac{\sqrt{98}}{10} = -\cos\alpha$

$-\frac{\sqrt{2976}}{20} + \frac{-\sqrt{2}}{20}$

$\sin\alpha = \frac{1}{\sqrt{50}}$

$\cos\alpha = \frac{7}{\sqrt{50}}$

۱۰۴- اگر $A = \sqrt[5]{9\sqrt{3}}(12)^{-1/5}$ باشد، حاصل $(1+A^{-1})^2$ کدام است؟

$$-\frac{\sqrt{2}}{2} \times \frac{1}{\sqrt{50}} + \frac{-\sqrt{2}}{2} \times \frac{1}{\sqrt{50}}$$

$$\frac{-1\sqrt{2}}{2\sqrt{50}} + \frac{-\sqrt{2}}{2\sqrt{50}} = \frac{-1\sqrt{2}}{2\sqrt{50}}$$

(a)

$$\frac{\sin^2 \alpha \cos^2 \alpha + \sin^2 \alpha}{1} = \frac{2}{3}$$

$$\sin^2 = \frac{1}{3} \Rightarrow \cos^2 = \frac{2}{3}$$

$$\tan^2 \alpha = \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$$

(b)

$$S_\Delta = \frac{1}{2} \times 6\sqrt{3} \times \sin\alpha = 9$$

$$6\sqrt{3} \times \sin\alpha = 9$$

$$\sin\alpha = \frac{9}{6\sqrt{3}} \Rightarrow$$

$$\frac{12}{6} = \{2\}^2 \qquad \frac{18\sqrt{3}}{36} = \frac{\sqrt{3}}{2} = \sin\alpha$$

$$120^\circ, 60^\circ$$

(۱۰)

$$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1+\sin\alpha}{|\cos\alpha|}$$

باید برابر با ... شود

$$\frac{-\sin\alpha}{\cos\alpha} + \frac{(1)}{|\cos\alpha|} = \frac{1+\cos\sin\alpha}{|\cos\alpha|}$$

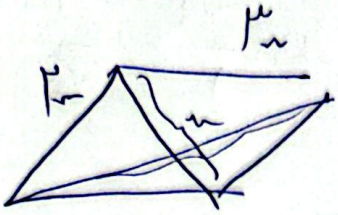
$\cos\alpha < 0$

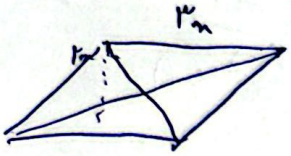
باید منفی باشد

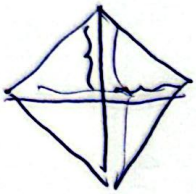
منفی

$$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin}{\tan\cos}$$

$\sin$ و $\cos$ ناصفر ⇐ منفی







$$S = \frac{1}{2} \times n \times y + \frac{1}{2} = a\varepsilon$$

$$2S_5 = 2 \times \frac{1}{2} \times$$

$$\frac{1}{2} \times \sqrt{} \times \sin\alpha$$

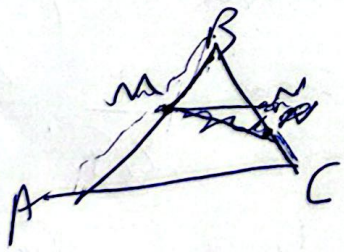
$$\frac{1}{2} \times 5 \times \sqrt{} \times \sin\alpha$$

$$\tan = \frac{\sqrt{3}}{3}$$

$$\frac{1}{2} \Leftarrow \cos\alpha = \frac{\sqrt{3}}{2} \quad \& \quad \sin\alpha = \frac{1}{2} \Leftarrow$$

$$12\sin\alpha = \frac{15}{2}\sin\alpha - \frac{1}{2}\sqrt{5}$$

$$6,5\sin\alpha = 1,75$$

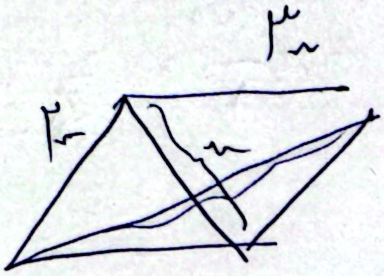


$$\frac{\frac{1}{2} AB \cdot BC \cdot \sin\hat{B}\alpha}{\frac{1}{2} \times BM \times BN \cdot \sin} = 2$$

$$\left.\begin{array}{l} 2BM + 2BN = AB \cdot AC \\ \text{ABC} \end{array}\right\} \Rightarrow$$

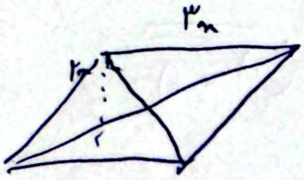
$$2BM = AM$$

$$\frac{BM}{AM} = \frac{1}{2}$$



$۳ \times ۲ \times \frac{1}{۳۲} \times \frac{1}{۲} = ۴۸ \times ۸۶$ (۷)

$۳x^۲ = ۵۶$

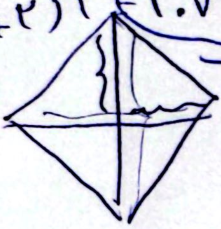


$x = \sqrt{۱۸}$

$x^۲ = \frac{۵۶}{۳} = ۱۸$

$(۲۳ + ۲)۲ = ۱۰\sqrt{۱۸}$

$S = \frac{1}{۲} \times x \times y \times \frac{1}{۲} = ۵۶$



۲۱۶

$۲۱۶ = ۶x^۲ \quad x^۲ = ۳۶ \quad x = ۶$

$۲S = ۳ \times \sin\alpha \times \frac{1}{۲}$

(۸)

$\frac{1}{۲} \times ۷ \times ۴ \times \sin\alpha$

$\tan = \frac{\sqrt{۳}}{۳}$

$\frac{1}{۲} \times ۵ \times ۷ \times \sin\alpha$

$۱۴\sin\alpha = \frac{۳۵}{۲}\sin\alpha - ۱/۷۵$

$\frac{1}{۲} \quad \cos = \frac{\sqrt{۳}}{۲} \qquad \sin\alpha = \frac{1}{۲} \quad \Leftarrow \quad -۳/۵\sin\alpha = -۱/۷۵$

(۹)