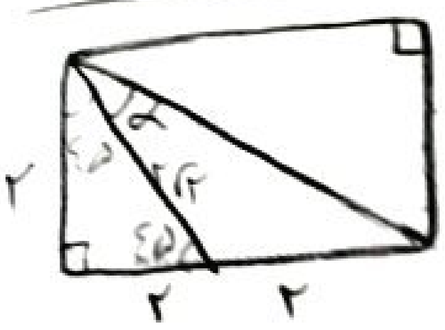
Date: / /

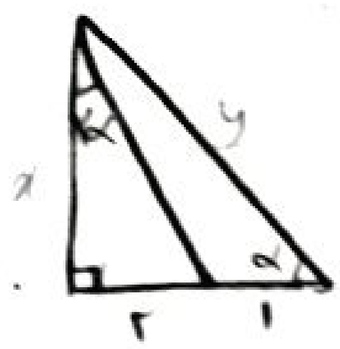
Sat Sun Man Tue Thu Wed Fri

Subject: مرجعا لب قدسیرن

۲-

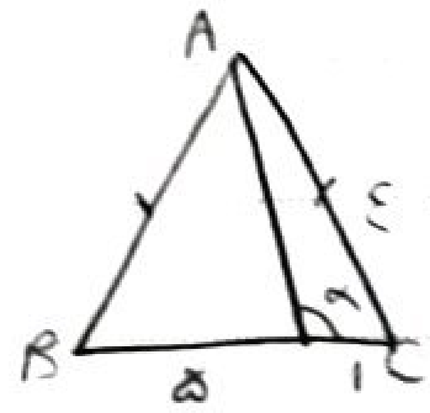


۳-



$\cot\alpha = \frac{۳}{۲x}$

۴-



۵-

$\sin^۲x + \cos^۲x = ۱ \Rightarrow \sin^۲x + \underbrace{\sin^۲x + \cos^۲x}_{۱} = \frac{۴}{۲}$

$\Rightarrow \sin^۲x = \frac{۱}{۲}$

$۱ + \cot^۲x = \frac{۱}{\sin^۲x} \Rightarrow ۱ + \cot^۲x = ۲ \Rightarrow \cot^۲x = ۲$

$\tan x = \frac{۱}{\cot x} \Rightarrow \tan^۲x = \frac{۱}{\cot^۲x} = \frac{۱}{۲}$

۶-

$$\frac{\sin^۴\alpha + ۴\cos^۲\alpha}{۱+\cos^۲\alpha} - \frac{\cos^۴\alpha + ۴\sin^۲\alpha}{۱+\sin^۲\alpha} \rightarrow \frac{\left(\frac{۱+\cos ۲\alpha}{۲}\right)^۲ + ۴\left(\frac{۱-\cos ۲\alpha}{۲}\right)}{۱ + \frac{۳-\cos ۲\alpha}{۲}} - \frac{\left(\frac{۱-\cos ۲\alpha}{۲}\right)^۲ + ۴\left(\frac{۱+\cos ۲\alpha}{۲}\right)}{\frac{۳+\cos ۲\alpha}{۲} + ۱ + \frac{۱+\cos ۲\alpha}{۲}}$$

$$\frac{\frac{(۱-\cos ۲\alpha)^۲}{۲} + ۴ + ۴\cos ۲\alpha}{۳+\cos^۲\alpha} - \frac{\frac{(۱+\cos^۲\alpha)^۲}{۲} + ۴ - ۴\cos ۲\alpha}{۳-\cos ۲\alpha}$$

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$\tan\alpha = \frac{4}{3} \Rightarrow 1+\tan^2\alpha = \frac{1}{\cos^2\alpha} \Rightarrow 1+\frac{16}{9} = \frac{1}{\cos^2\alpha} \Rightarrow \cos\alpha = \pm\frac{3}{5}$ (ربع ۳) -۷

$\tan\alpha = \frac{\sin\alpha}{\cos\alpha} \Rightarrow \frac{4}{3} = \frac{\sin\alpha}{-\frac{3}{5}} \Rightarrow \sin\alpha = -\frac{4}{5}$

$\sin(\frac{9\pi}{2}+\alpha)\cos(\frac{7\pi}{2}-\alpha) - \tan(\alpha-\frac{3\pi}{2}) = -(-\frac{3}{5})(-\frac{4}{5}) + \frac{3}{4} = \frac{27}{100}$

$\cos\alpha$ $-\sin\alpha$ $+\cot\alpha$

-۸

$2\cos\frac{\pi}{3}^{60^\circ} + \sqrt{2}\sin\frac{\pi}{12}^{15^\circ} - \sqrt{2}\cos\frac{\pi}{12}^{15^\circ} = \underbrace{2\times\frac{1}{2}}_{1} + \frac{\sqrt{4-2\sqrt{3}}}{2} - \frac{\sqrt{4+2\sqrt{3}}}{2} = \frac{\sqrt{3}-1-\sqrt{3}-1}{2} = -\frac{1}{2}$

$\sqrt{(1-\sqrt{3})^2} = \sqrt{3}-1$, $\sqrt{(1+\sqrt{3})^2} = \sqrt{3}+1$

$\sin^2 15 = \frac{1-\cos 30}{2} = \frac{1-\frac{\sqrt{3}}{2}}{2} = \frac{2-\sqrt{3}}{4} \Rightarrow \sin 15 = \frac{\sqrt{2-\sqrt{3}}}{2}$

$\cos^2 15 = \frac{1+\cos 30}{2} = \frac{2+\sqrt{3}}{4} \Rightarrow \cos 15 = \frac{\sqrt{2+\sqrt{3}}}{2}$

$\tan\alpha = \frac{2\tan\frac{\alpha}{2}}{1-\tan^2\frac{\alpha}{2}} = \frac{2\times\frac{1}{4}}{1-\frac{1}{16}} = \frac{\frac{1}{2}}{\frac{15}{16}} = \frac{8}{15}$ -۹