

به نام خدا نیایش زدی تالیف شماره ۱۵ دوازدهم رشته A

① دوره تناوب برای تانژانت $\leftarrow \frac{\pi}{|b|} \leftarrow \frac{\pi}{|-2|} \leftarrow \frac{\pi}{2} \leftarrow \frac{\pi}{2}$

$x=0 \quad \tan\left(\frac{\pi}{2}\right)=1 \quad B|_1 \quad S_{ABC} = \frac{AC \times OB}{2} =$

$\frac{\frac{\pi}{2} \times 1}{2} = \frac{\pi}{4}$

✓

$x = \frac{2}{3} \quad \frac{5}{9} - \frac{2}{3} \sin \alpha - \frac{1}{3} \cos^2 \alpha = 0 \quad \cos^2 \alpha = 1 - \sin^2 \alpha$ ②

$-\frac{1}{3}(1 - \sin^2 \alpha) - \frac{2}{3} \sin \alpha + \frac{5}{9} = 0 \quad \frac{1}{3} \sin^2 \alpha - \frac{2}{3} \sin \alpha + \left(\frac{5}{9} - \frac{1}{3}\right)$

$-\frac{1}{3} + \frac{1}{3} \sin^2 \alpha \quad \left(\frac{5}{9} = \frac{16}{36}\right) - \left(\frac{1}{3} = \frac{9}{36}\right) = \frac{7}{36}$

$\frac{1}{3} \sin^2 \alpha - \frac{2}{3} \sin \alpha + \frac{7}{36} = 0 \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$\frac{\frac{2}{3} \pm \sqrt{\frac{4}{9} - 4\left(\frac{1}{36}\right)}}{\frac{1}{3}} = \frac{\frac{2}{3} \pm \sqrt{\frac{16-4}{36}}}{\frac{1}{3}} = \frac{\frac{2}{3} \pm \frac{2}{3}}{\frac{1}{3}}$

$\sin \alpha \rightarrow \frac{\frac{5}{9} + \frac{7}{36}}{\frac{1}{3}} = \frac{\frac{25}{36}}{\frac{1}{3}} = \frac{25}{12}$ غلط

$\frac{\frac{5}{9} - \frac{7}{36}}{\frac{1}{3}} = \frac{\frac{5}{36}}{\frac{1}{3}} = \frac{5}{12}$ ✓
 $-1 \leq \sin \alpha \leq 1$

Date: / /

Subject: _____

(2)

$$1 + \tan^2 \theta = \frac{1}{\cos^2 \theta} = 9 \quad \sin^2 \theta = \frac{1}{9} \quad \cos^2 \theta = 1 - \frac{1}{9} = \frac{8}{9}$$

$$\frac{1}{\cos^2 \theta} = \frac{9}{1}$$

(2) ✓

$$\cos^2 \theta = 1 - \sin^2 \theta$$

$$\log \frac{\sin \theta}{-\cos \theta} = \log \frac{1}{10} \quad -\tan \theta = -\tan \theta = 1 \quad \tan \theta = -1$$

(3)

$$\tan^2 \theta + 1 = \frac{1}{\cos^2 \theta} \quad \cos^2 \theta = \frac{1}{10} \quad \sin^2 \theta = \frac{9}{10}$$

$$\text{Since } \log_a b \rightarrow b > 0 \Rightarrow \sin \theta > 0 \text{ and } \cos \theta < 0$$

$$\cos \theta = -\frac{\sqrt{10}}{10} \quad \sin \theta = \frac{\sqrt{10}}{10} \quad \sin \theta - \cos \theta = \frac{\sqrt{10} + \sqrt{10}}{10}$$

$$= \frac{2\sqrt{10}}{10} = \frac{\sqrt{10}}{5}$$

(2) ✓

$$\sin^2 \theta + 1 - \sin^2 \theta = \frac{4}{9} \quad \sin^2 \theta - \sin^2 \theta + \frac{1}{9} = 0 = x \quad (4)$$

$$\cos^2 \theta = (\cos \theta)^2 = (1 - \sin^2 \theta)^2 = \sin^4 \theta - 2\sin^2 \theta + 1$$

(2) ✓

$$\cos^2 \theta + \sin^2 \theta = \sin^4 \theta - \sin^2 \theta + 1 = ? = x + \frac{4}{9} = 0 + \frac{4}{9} = \frac{4}{9}$$

$$\frac{3 \sin x + \sin x \cos x}{2(1 - \cos^2 x)} = \frac{3 + \cos x}{2 \sin x}$$

فاز از
sin x

(2) ✓

یعنی اگر $\cos x = -1$ مشکلی نداریم
مقدار $\cos x$ است صورت
شماره است سر $\sin x \cos x$

نابینا سر

$-\cos x$

$\cos x < 0$

$$\frac{\sin^2 x - 1}{\cos x} > 0 \quad \frac{-\cos^2 x}{\cos x} > 0$$

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$$\tan x + \cot x = \frac{p}{\sin x \cos x}$$

$$\frac{p}{\sin x} + \frac{q}{\cos x} = \frac{p \cos x + q \sin x}{\sin x \cos x} = 0 \quad (4)$$

$$p \cos x + q \sin x = 0$$

$$p \cos x = -q \sin x$$

$$\frac{\sin x}{\cos x} = \frac{p}{-q}$$

$$\tan x = -\frac{p}{q} \quad \cot x = \frac{1}{\tan x} = -\frac{q}{p}$$

$$\tan x + \cot x = \frac{-p}{q} + \left(\frac{-q}{p}\right)$$

$$\frac{-p - \frac{q}{p}}{1} = \frac{-p^2 - q^2}{p}$$

(2) ✓

$$\sqrt{\sin^2 \alpha + \cos^2 \alpha} + \sqrt{\sin^2 \beta + \cos^2 \beta} = \sqrt{(\sin \alpha + \cos \alpha)^2}$$

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

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

$$\sin \alpha \cos \beta + \sin \beta \cos \alpha + \sin \beta \cos \alpha - \sin \alpha \cos \beta = \sqrt{2} \sin(\alpha + \beta)$$

$$\sin \alpha \cos \beta + \sin \beta \cos \alpha + \sin \beta \cos \alpha - \sin \alpha \cos \beta = \sqrt{2} \sin \beta \cos \beta$$

$$= \frac{\sqrt{2} \cos \beta}{\sqrt{2} \times \frac{1}{\sqrt{2}}} = \sqrt{2}$$

(2) ✓

زیرا زاویه های متجانس
 $\sin \beta = \cos \beta$

$$p \sin^2 \alpha = 1 - \cos^2 \alpha \rightarrow p \sin^2 \alpha = 1 - \cos^2 \alpha \quad (1)$$

$$1 - p \sin^2 \alpha = 1 - (1 - \cos^2 \alpha) = \cos^2 \alpha$$

$$1 - (1 - \cos^2 \alpha)$$

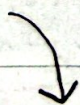
$$1 - \tan^2 \alpha = \frac{1 - \sin^2 \alpha}{\cos^2 \alpha} = \frac{\cos^2 \alpha - \sin^2 \alpha}{\cos^2 \alpha}$$

(2) ✓

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

$$\frac{\cos^2 \alpha - \sin^2 \alpha}{\cos^2 \alpha}$$

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



$$\frac{1}{\cos^2 \alpha}$$

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

$$\rightarrow (\cos 2\alpha) (\cos 2\beta) (\cos 2\gamma)$$

ادامه صفحه بعد

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$$\cos 10^\circ \times \cos 20^\circ \times \cos 30^\circ \times \frac{\sin 10^\circ}{\sin 10^\circ} = \frac{\frac{1}{4} \sin 40^\circ \times \cos 20^\circ \times \cos 30^\circ}{\sin 10^\circ} \quad (A)$$

$$= \frac{\frac{1}{4} \sin 40^\circ \times \cos 30^\circ}{\sin 10^\circ} = \frac{\frac{1}{4} \sin 10^\circ}{\sin 10^\circ} \quad \sin 10^\circ = \cos 80^\circ$$

زیرا زاویه متکمل اند

$$= \frac{1}{4} \frac{\cos 10^\circ}{\sin 10^\circ} = \frac{1}{4} \cot 10^\circ$$

$$\sin a = \sqrt{1 - \cos^2 a} \rightarrow \sqrt{1 - \cos^2 a} + 3 \cos a = 4 \quad (9)$$

$$\sqrt{1 - \cos^2 a} = 4 - 3 \cos a \quad \text{توان } 2 \rightarrow 1 - \cos^2 a = 16 + 9 \cos^2 a - 24 \cos a$$

$$= 10 \cos^2 a - 24 \cos a + 15 = 0 \quad \left| \cos 2\phi = \cos^2 \phi - \sin^2 \phi = 2 \cos^2 \phi - 1 \right.$$

$$a) (\cos 2\phi) - 12 \cos a = a) (2 \cos^2 a - 1) - 12 \cos a = 10 \cos^2 a - 12 \cos a$$

$$10 \cos^2 a - 12 \cos a + 15 = 0 \quad x + 15 = 0 \quad x = -15$$

$$10 \cos^2 a - 12 \cos a - a = ? \quad x - a = -15 - a = -1$$

(10) ✓

جواب آنرا

$$\sin B \sin C = \frac{1}{4} (\cos(B-C) + \cos A) \quad \left| \cos^2 \frac{A}{2} = \frac{1 + \cos A}{2} \right. \quad (12)$$

مربع ضرب به جمع

مربع طلایی

$$\frac{1}{4} (\cos(B-C) + \cos A) = \frac{1 + \cos A}{2} \quad \cos(B-C) = 1$$

$$B-C = 0^\circ \quad B=C=45^\circ$$

$$B+C+A = 180^\circ$$

$$A = 180^\circ - 135^\circ = 45^\circ$$

جمع زوایای داخلی مثلث

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(11) ✓