برای کتاب ریاضی

(۱)

$+\frac{\sqrt{3}}{2}(a+b)$

$$\frac{-\frac{\sqrt{3}}{2}a-\frac{\sqrt{3}}{2}b}{-\frac{1}{2}a+\frac{1}{2}b}=+\frac{\sqrt{3}}{3}$$

$\frac{1}{2}(a+b)$

$3a+2b=-a+b$

$4a=-2b \qquad \frac{b}{a}=-2$

(۲)

$P=6:$

$60-210=-150$

$=210$

$S=\frac{1}{2}\times 1\times \sin 150$ ($\frac{1}{2}$)

$=\frac{1}{4}$

(۳)

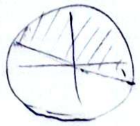
$$\frac{\frac{\pi}{9}}{\pi}=\frac{D}{180}$$

$\Rightarrow D=20 \qquad \frac{20}{360}=\frac{\frac{20}{6}}{60}$

$30+(30-\frac{20}{12})$

$=\frac{115}{4}$

(۵)



$-\frac{1}{2}<\sin x\le 1$

$-\frac{1}{2}<\frac{m-3}{5}\le 1$

$\Rightarrow \frac{1}{2}<m\le 8$

۸ عدد صحیح

$\tan 15=\frac{25}{100}=\frac{1}{4}$

۱۵ درجه

(۴)

$$\frac{\sin(90+15)+K\cos(270-15)}{\cos(180-15)+2\sin(180+15)}$$

$$=\frac{\cos(15)-K\sin(15)}{-\cos(15)-2\sin(15)}=\frac{4-K}{-4-2}=3$$

$\Rightarrow K=22$

(۷)

$2+2\cos x=1-\cos x$

$\Rightarrow \cos x=-\frac{1}{3}$

$1+\tan^2=9 \Rightarrow \tan=\pm\sqrt{8} \Rightarrow \cot=-\frac{1}{\sqrt{8}}$

$$\frac{\cot x+\cot x}{\tan x-2\tan x}=-\frac{2\cot x}{\tan x}=-2\cot^2 x$$

$=-\frac{1}{4}$

(۸)

$\frac{108}{180}=\frac{R}{\pi}\Rightarrow R=\frac{27\pi}{45}$

$\frac{27\pi}{45}\times r_A=\frac{9\pi}{10}\times r_B \Rightarrow \frac{r_A}{r_B}=\frac{3}{2}$

$\Rightarrow \frac{S_A}{S_B}=\frac{9}{4}$

(٩)

$AB = \sqrt{5}$

$S_{\triangle ADC} = \sqrt{5} - \frac{1}{2} \times 1 \times \sqrt{5}$

$= \frac{\sqrt{5}}{2} = \frac{DC \times \sqrt{5}}{2}$

$\Rightarrow DC = 1$

$\Rightarrow \cot C = \frac{2}{\sqrt{5}}$

$1 + \cot^2 C = \frac{1}{\sin^2 C}$

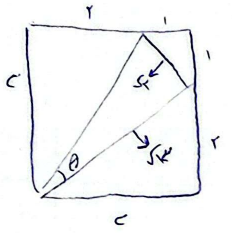
$\Rightarrow \sin C = \frac{\sqrt{5}}{\sqrt{9}}$

$\Rightarrow \cos C = \frac{2}{\sqrt{9}}$

$\sin 2C = 2 \times \frac{\sqrt{5}}{\sqrt{9}} \times \frac{2}{\sqrt{9}}$

$= \frac{4\sqrt{5}}{9}$

(١٠)



$2^2 = 1^2 + 1^2 - 2 \times \sqrt{4} \times \sqrt{4} \cos\theta$

$\Rightarrow \cos\theta = \frac{-8}{-12} = \frac{12}{16}$

$\sin\theta = \sqrt{1 - \frac{144}{169}} = \frac{5}{13}$