به نام خدا   پاسخنامه دوازدهم پسر دوشنبه

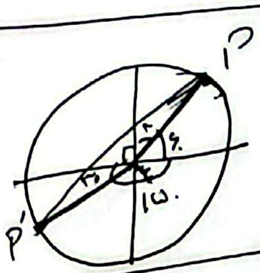
۱ـ

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

$$\longrightarrow\frac{-\sqrt{3}(a+b)}{(-a+b)}=-\frac{\sqrt{3}}{3}\longrightarrow\frac{a+b}{-a+b}=\frac{1}{3}$$

$$\longrightarrow 3a+3b=-a+b\longrightarrow 4a=-2b\longrightarrow\boxed{\frac{b}{a}=-2}$$

۲ـ



$\hat{O}=150$

$OP=OP'=1$

قضیه کسینوس $= PP'^2=1+1-2\times1\times1\times\cos150 \;\; +\frac{\sqrt{3}}{2}$

$\longrightarrow \boxed{PP'=\sqrt{2+\sqrt{3}}}$

$\boxed{2P=1+1+\sqrt{2+\sqrt{3}}}$ ← محیط

۳ـ

$\frac{12}{9}=20^\circ$

زاویه بین دو ساعت $=\frac{360}{12}=30 \longrightarrow \frac{2}{3}$ ساعت رقم

$\longrightarrow$ ساعت ۲:۴۰ دقیقه خواهد بود

۴ـ

$$|5.5m-30h|=20$$

$$\longrightarrow|5.5m-90|=20$$

$$\longrightarrow 5.5m=110\longrightarrow\boxed{m=20}$$

۵ـ

$$-\frac{1}{2}\le\sin x\le 1\longrightarrow\frac{m-1}{5}\le 1 \;\; 5\;8$$

$(\frac{1}{2},8]$

$[1,8]=$ ۸ عدد

$$\frac{\cos\omega + k\sin\omega}{-\cos\omega - 2\sin\omega} = 2 \xrightarrow{\div\cos\omega} \frac{1 - \frac{1}{2}k}{-1 - 2\times\frac{1}{2}} = \frac{1-\frac{1}{2}k}{-\frac{2}{2}} = 2$$

$$\longrightarrow -\frac{9}{2} = 1 - \frac{1}{2}k \qquad -11 = -\frac{1}{2}k$$

$$\longrightarrow \boxed{k = 22}$$

$$\frac{\cot x + \cot x}{\tan x + 2\tan x} = \frac{2\cot x}{3\tan x} = \frac{2}{3}\cdot\frac{\cos}{\sin}\cdot\frac{\cos}{\sin} = \frac{2}{3}\cot^2 = \frac{2}{3}\times\frac{1}{4}$$

$$= \boxed{\frac{1}{6}}$$

$$\frac{1-\cos x}{1+\cos x} = 2 \longrightarrow 2 + 2\cos x = 1 - \cos x$$

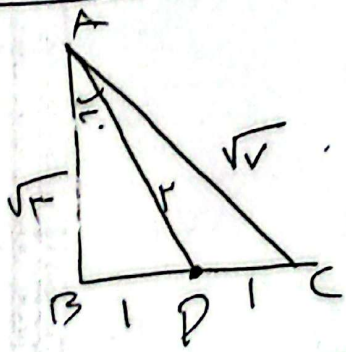
$$3\cos x = -1$$

$$\longrightarrow \boxed{\cos x = -\frac{1}{3}} \qquad 9 = 1 + \tan^2$$

$$\longrightarrow \boxed{\tan = 2\sqrt{2}} \qquad \longrightarrow \boxed{\cot = \frac{1}{2\sqrt{2}}}$$

$$\frac{10}{20} = \frac{2}{10} \longrightarrow 2R_A \times \frac{2}{10} = \frac{q}{20} \times 2R_B$$

$$\longrightarrow \frac{R_A}{R_B} = \frac{\frac{q}{20}}{\frac{2}{10}} = \frac{1}{2} \longrightarrow \left(\frac{R_A}{R_B}\right)^2 = \boxed{\frac{q}{4} = \frac{S_A}{S_B}}$$



$$S_{ABC} = \sqrt{2} \longrightarrow \frac{\sqrt{6}\times(1+DC)}{2} = \sqrt{2}$$

$$\sin 2C = 2\sin\hat{C}\cos\hat{C} \longrightarrow \boxed{DC = 1}$$

$$\sin 2C = 2\times\frac{\sqrt{2}}{\sqrt{7}}\times\frac{2}{\sqrt{7}} = \boxed{\frac{4\sqrt{2}}{7}} \longrightarrow AC = \sqrt{7}$$

$$S_{ABC} = 2\times 2 = 4q$$

$$S_{ABC} = \underbrace{S_{MNC}}_{\frac{1\times 2}{2}} + \underbrace{S_{ABM}}_{\frac{2\times 2}{2}} + \underbrace{S_{NDA}}_{\frac{2\times 2}{2}} + \underbrace{S_{AMN}}_{AM\times AN\times\frac{1}{2}\times\sin\theta}$$

$$\frac{18}{7} = \frac{12}{2} + 12\times\frac{1}{2}\times\sin\theta \longrightarrow \frac{9}{2} = \frac{12}{2}\times\sin\theta$$

$$\longrightarrow \boxed{\sin\theta = \frac{9}{12}}$$