

12 calc

13 calc

14 calc

$$\sin \frac{\pi}{4} = -\frac{\sqrt{2}}{2}$$

$$\cos \frac{\pi}{4} = -\frac{\sqrt{2}}{2}$$

$$\sin \frac{\pi}{4} = -\frac{1}{2}$$

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

$$\frac{a \sin \frac{\pi}{4} + b \cos \frac{\pi}{4}}{a \sin \frac{\pi}{4} + b \cos \frac{\pi}{4}} = \frac{a \cdot \frac{\sqrt{2}}{2} + b \cdot \frac{\sqrt{2}}{2}}{a \cdot \frac{\sqrt{2}}{2} + b \cdot \frac{\sqrt{2}}{2}} = -\frac{\sqrt{2}}{2}$$

$$\frac{\sqrt{2}}{2} a - \frac{\sqrt{2}}{2} b = -\frac{\sqrt{2}}{2} a - \frac{\sqrt{2}}{2} b$$

$$\frac{\sqrt{2}}{2} a = -\frac{\sqrt{2}}{2} b \rightarrow ra = -b$$

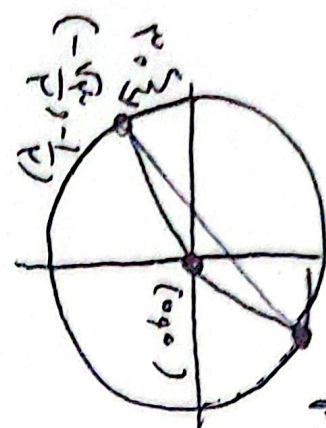
$$\frac{b}{a} = -1$$

$$\frac{dx + y \sqrt{x^2 + 1}}{x^2 + 1} = \frac{dp}{p} \Rightarrow \log p = \int \frac{dx}{x^2 + 1} + \log C$$

$$\log p = \frac{1}{2} \log(x^2 + 1) + \log C \Rightarrow p = \sqrt{x^2 + 1} \cdot C$$

$$1 = \sqrt{1 + 0} \cdot C \Rightarrow C = 1$$

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$$P\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$$

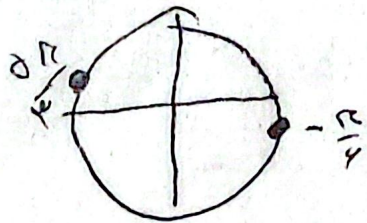
۴ - عقرب ساعت شمار در هر ساعت ۳۰ درجه یعنی $\frac{R}{4}$ طی می کند.

$$\begin{array}{lcl} ۹ \text{ (عقرب)} & \rightarrow & \frac{R}{4} \\ ۴ \text{ (عقرب)} & & \frac{R}{4} \end{array} \rightarrow ۲۰ \text{ و } ۴۰'$$

$$|\omega, \omega M - \kappa, h| = \kappa_0$$

سین (از دست راست) $\rightarrow$ $\omega, \omega M = 110 \rightarrow M = 40 \rightarrow$ $\omega, \omega M - \kappa_0 \times \kappa = 20$

$\rightarrow$ $\omega, \omega M = 70 \rightarrow M = \frac{70}{\omega, \omega}$
 $\delta, \delta M - \kappa_0 \times \kappa = -20 \rightarrow \delta, \delta M = 70$



$$-\frac{R}{4} < M \leq \frac{5R}{4}$$

$$-\frac{1}{4} < \sin m \leq 1$$

$$-\frac{1}{4} < \frac{M - \kappa}{\omega} \leq 1$$

$$\frac{M - \kappa}{\omega} \leq 0$$

$$\frac{M - \kappa}{\omega} > -\frac{1}{4}$$

$$\frac{M - \kappa}{\omega} + \frac{1}{4} > 0$$

$$2M - \kappa + \omega > 0$$

$$2M - 1 > 0$$

$$M > \frac{1}{2}$$

$M: \{ 1, 2, 3, 4, 5, 6, 7, 8 \}$
 ۱، ۲، ۳، ۴، ۵، ۶، ۷، ۸
 ۱، ۲، ۳، ۴، ۵، ۶، ۷، ۸

$$\frac{\sin(\frac{R}{r} + 10) + K \cos(\frac{rR}{r} - 10)}{\cos(R-10) + r \sin(R+10)} = \frac{\cos^{\frac{r}{r}} 10 + (-K \sin 10)}{-\cos 10 - r \sin 10} = r$$

$$\tan 10 = \frac{\sin 10}{\cos 10} = \frac{1}{r}$$

$$r \sin 10 = \cos 10$$

$$-1 \sin 10 = r \sin 10 - K \sin 10$$

$$K \sin 10 = r \sin 10$$

$$\rightarrow K = r$$

$$\frac{1 - \cos u}{1 + \cos u} = r$$

$$r + r \cos u = 1 - \cos u$$

$$r \cos u = -1 \rightarrow \cos u = -\frac{1}{r}$$

$$\sin u = \frac{r\sqrt{r}}{r}$$

$$\cos^2 u + \sin^2 u = 1 \rightarrow \frac{1}{r} + \sin^2 u = 1$$

$$\sin^2 u = \frac{1}{r} \rightarrow \sin u = \frac{r\sqrt{r}}{r}$$

$$\cot u = \frac{\cos u}{\sin u} = \frac{-\frac{1}{r}}{\frac{r\sqrt{r}}{r}} = -\frac{1}{r\sqrt{r}}$$

$$\tan u = -r\sqrt{r}$$

$$\frac{\tan(\frac{R}{r} - u) - \cot(R - u)}{\cot(\frac{rR}{r} - u) + r \tan(rR - u)} = \frac{\cot u + \cot u}{\tan u - r \tan u} = r$$

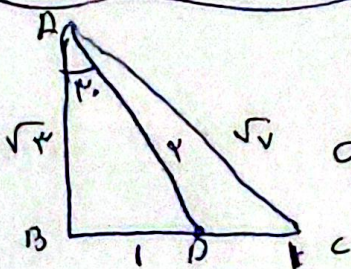
$$\frac{r \cot u}{-\tan u} = \frac{-r}{r\sqrt{r}} = \frac{-1}{r}$$

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

$$\frac{D}{1A^0} = \frac{R}{R} \Rightarrow \frac{1.1}{1A^0} = \frac{R}{R} \rightarrow R = \frac{rR}{r}$$

$$\omega_{AB} = \alpha R \Rightarrow \frac{rR}{10} \times R_A = \frac{rR}{10} \times R_B \rightarrow \frac{R_A}{R_B} = \frac{r}{r}$$

$$\frac{AC \cos \theta}{BC \cos \theta} = \left(\frac{R_A}{R_B}\right)^r \Rightarrow \left(\frac{r}{r}\right)^r = \frac{r}{r}$$



$$\sin \theta = \frac{1}{r} \rightarrow BD = \frac{1}{r} AD \rightarrow AD = r$$

$$AB^2 + BD^2 = AD^2$$

$$AB^2 + 1 = r^2 \rightarrow AB = \sqrt{r}$$

$$S_{ABC} = \frac{AB \times BC}{r} \Rightarrow \sqrt{r} = \frac{\sqrt{r} \times r}{r} \Rightarrow BC = r$$

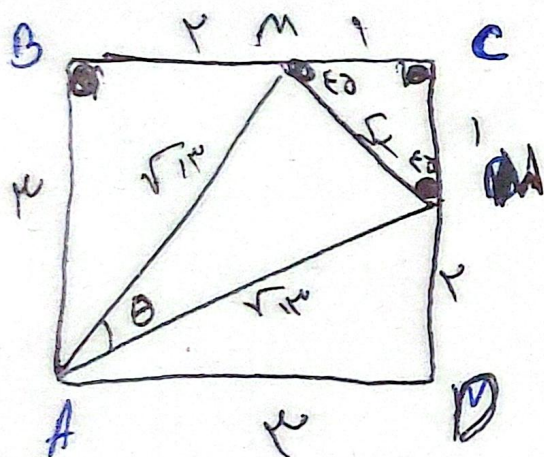
$$DC = 1$$

$$AB^2 + BC^2 = AC^2 \Rightarrow r + r = v \Rightarrow AC = \sqrt{v}$$

$$\sin C = \frac{\sqrt{r}}{\sqrt{v}}$$

$$\Rightarrow \sin \gamma C = r \sin C \cos C = r \times \frac{\sqrt{r}}{\sqrt{v}} \times \frac{r}{\sqrt{v}} = \frac{r\sqrt{r}}{v}$$

$$\cos C = \frac{r}{\sqrt{v}}$$



$$AM = AN \Rightarrow \sqrt{9+9} = \sqrt{18}$$

$$\begin{cases} BM = DN \\ BA = AN \\ N = B = 90^\circ \end{cases} \begin{cases} \Delta DNA \cong \Delta BMA \\ \xrightarrow{\text{C.O.C.O.}} \end{cases}$$

$$MN^2 = AM^2 + AN^2 - 2AM \cos \theta \Rightarrow 12^2 = 17 + 17 - 2\sqrt{17} \times 12 \cos \theta$$

$$144 \cos \theta = 32$$

$$\cos \theta = \frac{12}{17}$$

$$\sin^2 \theta + \cos^2 \theta = 1 \Rightarrow \frac{144}{149} + \sin^2 \theta = 1$$

$$\sin^2 \theta = \frac{5}{149} \Rightarrow \sin \theta = \frac{\sqrt{5}}{12}$$