

۱. $\tan \frac{\pi}{4} + \sin \frac{\pi}{4} \cos \frac{\pi}{4} =$ به ۲۲۵ کسر بریز

$$+ (-1) + \left(\left(-\frac{\sqrt{2}}{2} \right) \left(-\frac{\sqrt{2}}{2} \right) \right) = -1 + \frac{1}{2} = -\frac{1}{2}$$

۲. $\tan \frac{\pi}{3} \sin \frac{\pi}{3} + \cos \frac{\pi}{3} = \left(1 \times \frac{\sqrt{3}}{2} \right) + \left(\frac{1}{2} \right)$

$$= \frac{\sqrt{3} + 1}{2}$$

۳. $\frac{\sin n}{\sin n}$ تقسیم کنیم داریم:

$$\frac{3 \cos n - 1}{\cos n + 1} = \frac{11}{5}$$

۴. $\sin^2 a = \cos^2 a \Rightarrow \cos^2 a = \sin^2 a$

$\Rightarrow \cos^2 a = 1 \Rightarrow \cos a = \frac{1}{\sqrt{5}}$ از آن در ربع سوم

$$\cos a = -\frac{1}{\sqrt{5}} = \frac{-\sqrt{5}}{5}$$

۵. $\cos(A+B) = \cos A \cos B - \sin A \sin B$ (تفاوت - مشترک +)

$\sin(A+B) = \sin A \cos B + \sin B \cos A$

$\cos a = \frac{\sqrt{5}}{5}$ الف

$\sin a = \frac{2}{5} \Rightarrow \frac{1}{5}$ ب

$\sin \frac{11\pi}{12} = \frac{\sqrt{2}}{2}$ الف

$\cos \frac{11\pi}{12} = -\frac{\sqrt{2}}{2}$ ب

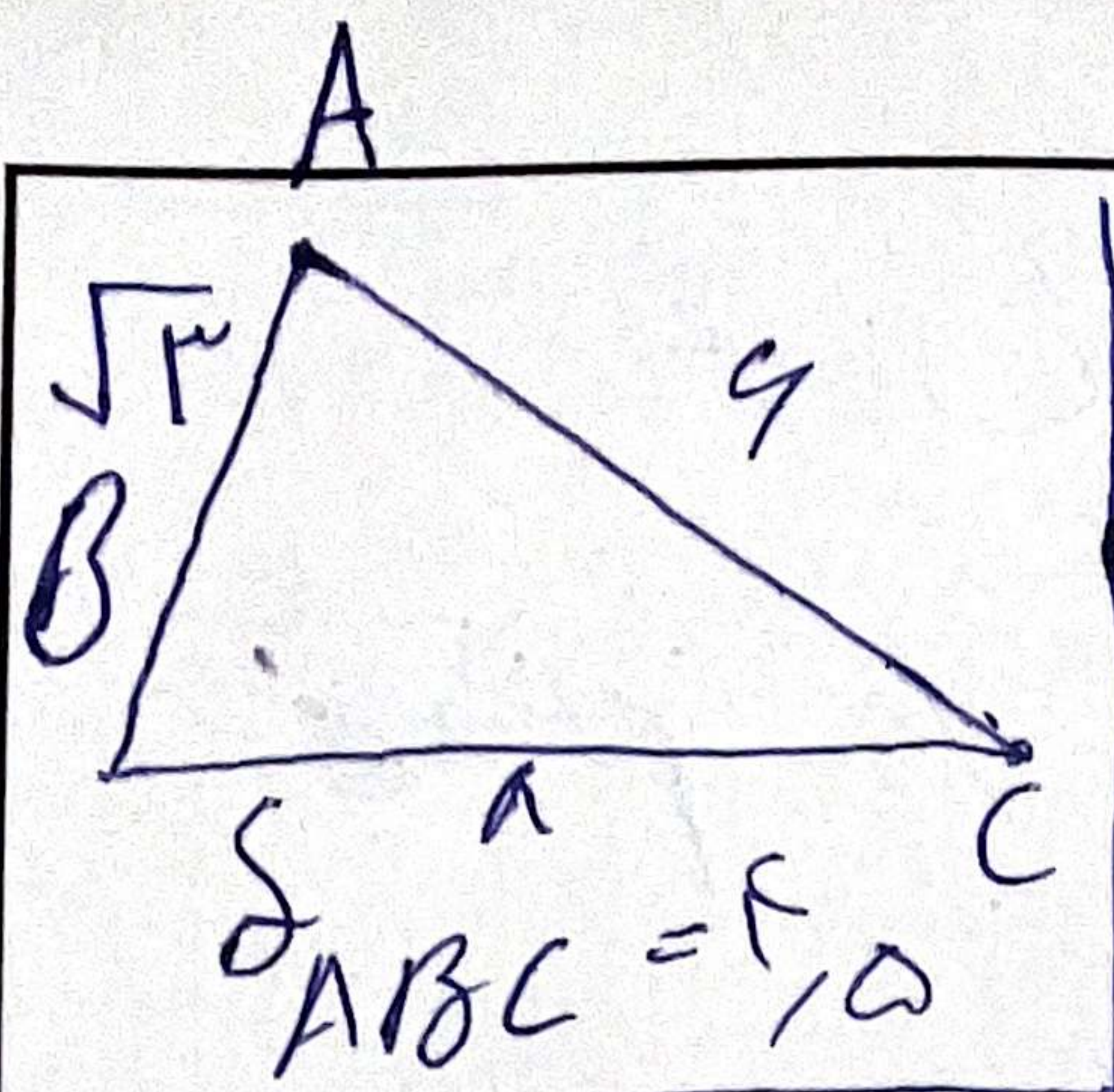
$\sin A = \frac{\sqrt{2}}{2}$ الف

$\cos A = \frac{10 - \sqrt{2}}{10} \Rightarrow \frac{14}{10} - \frac{2}{10} = \frac{12}{10}$

۶. $(\sin^2 n + \cos^2 n) + \sin^2 n = \frac{2}{3} \Rightarrow \sin^2 n = \frac{1}{3}$

$\Rightarrow \cos^2 n = \frac{2}{3}$

$\Rightarrow \tan^2 n = \frac{1}{2} = \frac{1}{2}$



$$4 \times \sqrt{3} \times \sin A \times \frac{1}{2} = 9$$

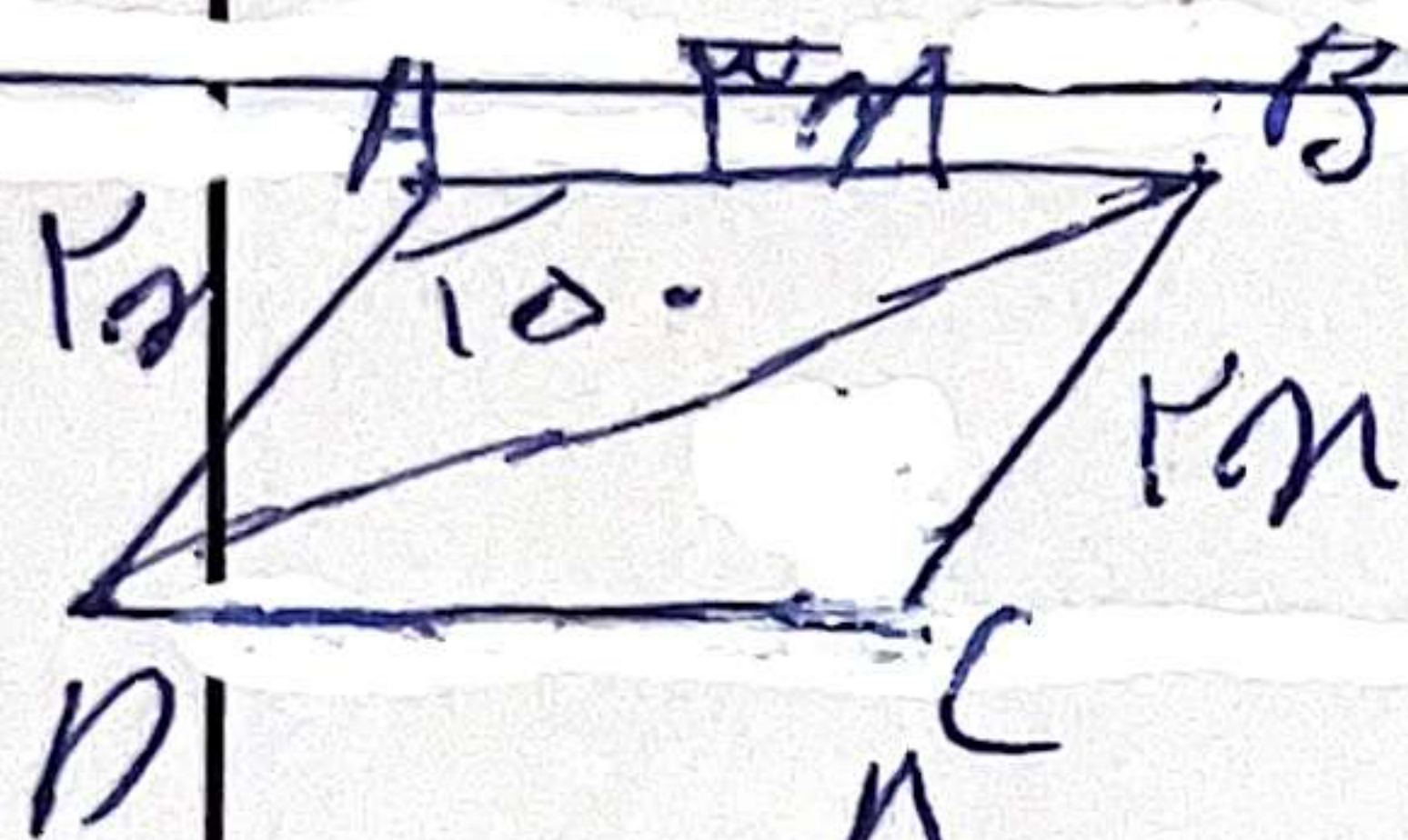
$$\Rightarrow \sin A = \frac{\sqrt{3}}{2} \Rightarrow \hat{A} = 120^\circ \text{ or } 60^\circ$$

$$a^2 = 16 + 12 - 12\sqrt{3} \cos A$$

$$\Rightarrow \text{If } A = 90^\circ \Rightarrow 16 - \left(\frac{12\sqrt{3}}{1} \right) = 16 - 12\sqrt{3}$$

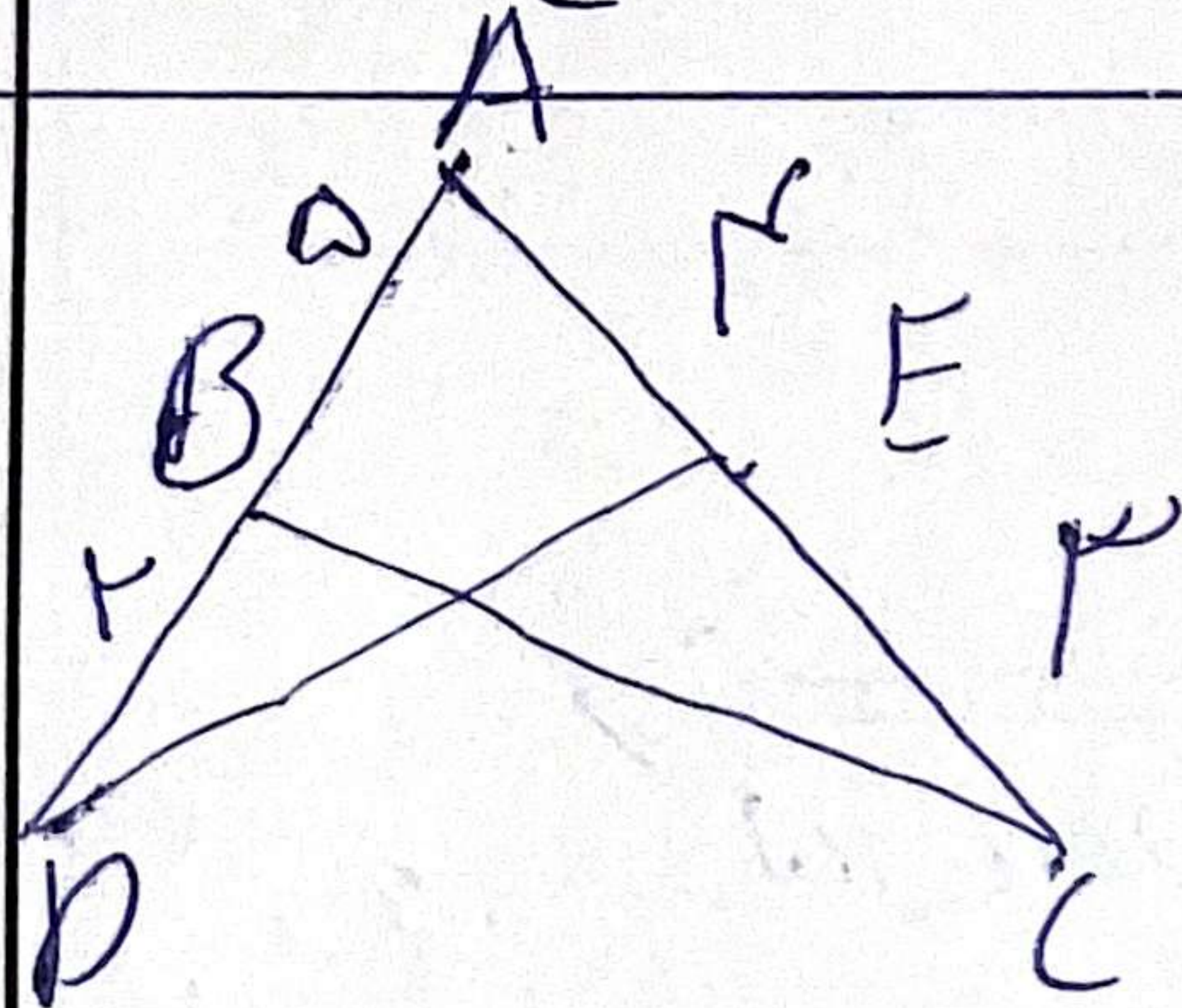
$$\text{or if } A = 120^\circ \Rightarrow 16 - \left(\frac{12\sqrt{3}}{-1} \right) = 16 + 12\sqrt{3}$$

$$\Rightarrow \frac{a_{\max}}{a_{\min}} = \frac{\sqrt{16 + 12\sqrt{3}}}{\sqrt{16 - 12\sqrt{3}}} \approx 1.71$$



$$S_{ABCD} = 10 \times 10 \times \frac{1}{2} \times \sin 120^\circ = \frac{50\sqrt{3}}{2} = 25\sqrt{3} \text{ m}^2$$

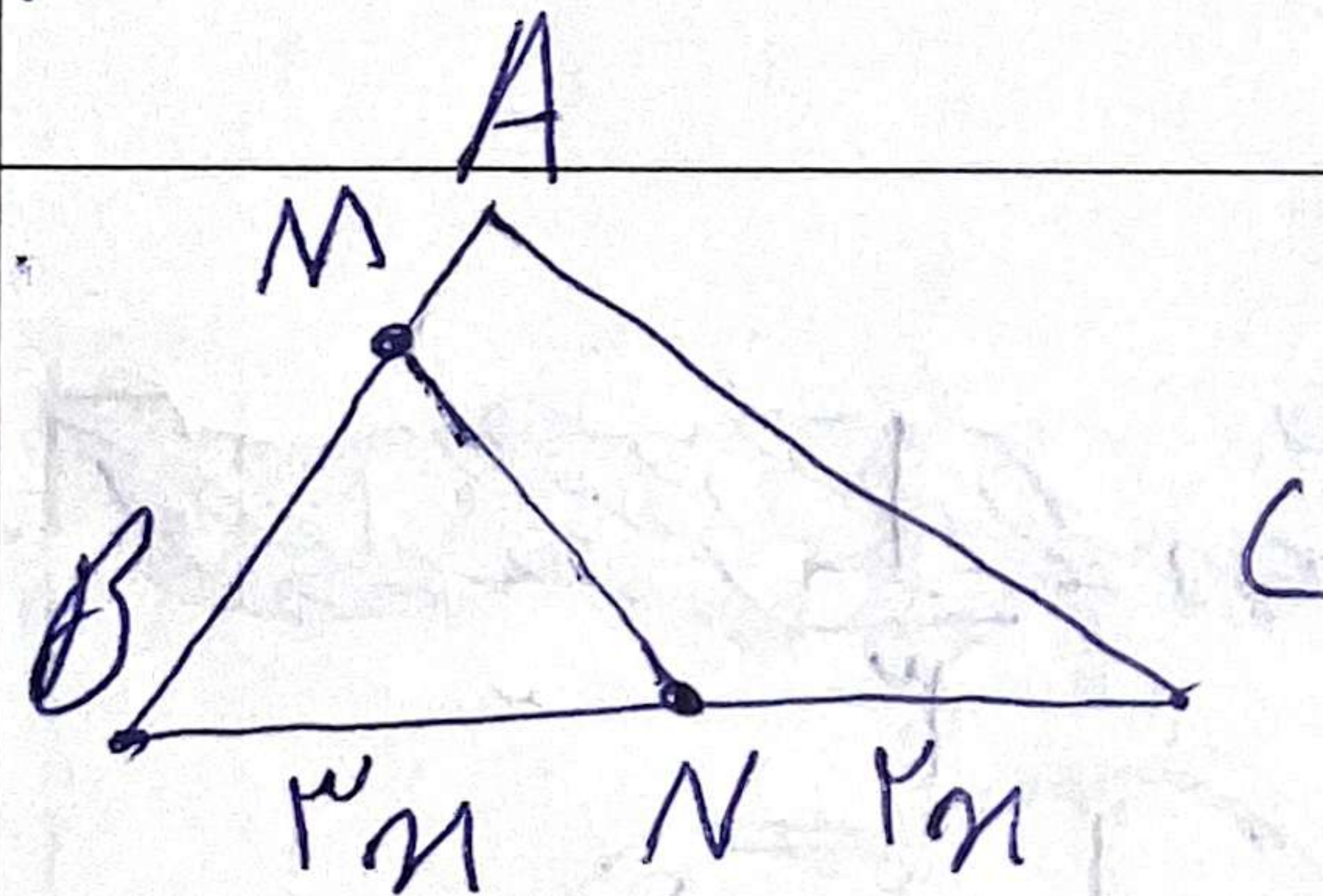
$$= 25\sqrt{3} \Rightarrow m^2 = 19 \Rightarrow m = 4 \Rightarrow P_{ABCD} = 10m = 40$$



$$S_{ABC} - S_{ADE} = \frac{r^2 \sin A}{2} - \frac{r^2 \sin A}{2}$$

$$= r^2 \times \sin A = 1, \text{ or } \Rightarrow \sin A = \frac{1}{r}$$

$$\Rightarrow A = 120^\circ \text{ or } 60^\circ \Rightarrow A = 120^\circ \text{ or } 60^\circ \Rightarrow \sin A = \frac{\sqrt{3}}{2}$$



$$\Rightarrow \frac{BM}{AM} = \frac{2}{3} = \left(\frac{2}{3} \right)$$

$$\frac{2m \times AB}{r} \times \sin B = \frac{r \times m \times BM}{r} \times \sin B$$

$$\Rightarrow 2AB = 4BM \Rightarrow AB = 2y$$

$$, BM = 2y, AM = 3y$$

$$\frac{1}{| \cos a |} - \frac{\sin a}{\cos a} = \frac{1 + \sin a}{| \cos a |}$$

$$\text{If } \cos a = + \Rightarrow \frac{1 - \sin a}{| \cos a |} \Rightarrow X$$

$$\text{If } \cos a = - \Rightarrow \frac{1 + \sin a}{| \cos a |} \Rightarrow \checkmark$$

$$\frac{|\sin a|}{\cos a} = - \frac{\sin a}{\cos a}$$

$$\Rightarrow \text{If } \sin a = + \Rightarrow \frac{\sin a}{\cos a} = - \frac{\sin a}{\cos a} \Rightarrow X$$

$$\Rightarrow \cos a = - \text{ (I) }$$

$$\Rightarrow \text{If } \sin a = - \Rightarrow \frac{\sin a}{\cos a} = \frac{\sin a}{\cos a} \Rightarrow \checkmark \Rightarrow \sin a = - \text{ (II) }$$

(۴) از فرمول های زیر استفاده می کنیم

$$\cos(A \pm B)$$

$$= \cos A \cos B \mp \sin A \sin B$$

$$\sin(A \pm B)$$

$$= \sin A \cos B \pm \sin B \cos A$$

الف)

$$\sin^2 a + \cos^2 a = 1, \sin a = \frac{\sqrt{2}}{10}$$

$$\Rightarrow \frac{2}{100} + \cos^2 a = 1 \Rightarrow \cos^2 a = \frac{98}{100} \xrightarrow{\text{جذر می گیریم}} \cos a$$

$$= -\frac{\sqrt{2}}{10} \quad \left| \quad \begin{array}{l} \sin \frac{11\pi}{4} = \sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2} \\ \cos \frac{11\pi}{4} = \cos \frac{3\pi}{4} = -\frac{\sqrt{2}}{2} \end{array} \right.$$

$$\left(\frac{-\sqrt{2}}{10} \times \frac{\sqrt{2}}{10} \right) - \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10} \right)$$

$$= \frac{12}{100} = \left(\frac{3}{25} \right)$$

$$\frac{\sin a}{\cos a} = \frac{1}{\sqrt{2}} \Rightarrow \frac{\sin^2 a}{\cos^2 a} = \frac{1}{2} \Rightarrow 2 \sin^2 a = \cos^2 a$$

فاصله قابل

$$Kq \sin^2 a = 1 - \sin^2 a \Rightarrow \omega \cdot \sin^2 a = 1$$

$$\Rightarrow \sin^2 a = \frac{1}{\omega_0} \xrightarrow{\text{ریشه بگیر}} \sin a = \frac{\sqrt{\omega_0}}{\omega_0}$$

$$Kq - Kq \cos^2 a = \cos^2 a$$

$$\Rightarrow Kq = \omega \cdot \cos^2 a \Rightarrow \cos^2 a = \frac{Kq}{\omega_0} \xrightarrow{\text{ریشه بگیر}} \cos a = \frac{\sqrt{Kq}}{\omega_0}$$

$$\cos a = \frac{\sqrt{Kq}}{\omega_0}$$

$$\sin \frac{13\pi}{4} = \sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$$

$$\cos \frac{13\pi}{4} = \cos \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$$

می گذاریم ترمینل:

$$\left(-\frac{\sqrt{2}}{2} \times \frac{\sqrt{Kq}}{\omega_0} \right) + \left(\frac{\sqrt{\omega_0}}{\omega_0} \times \frac{-\sqrt{2}}{2} \right)$$

$$= \frac{-\sqrt{2} \sqrt{Kq}}{2 \omega_0} + \frac{-\sqrt{2} \sqrt{\omega_0}}{2 \omega_0} = \frac{-\sqrt{2} (\sqrt{Kq} + \sqrt{\omega_0})}{2 \omega_0}$$

$$= \frac{-\sqrt{2}}{\omega_0}$$