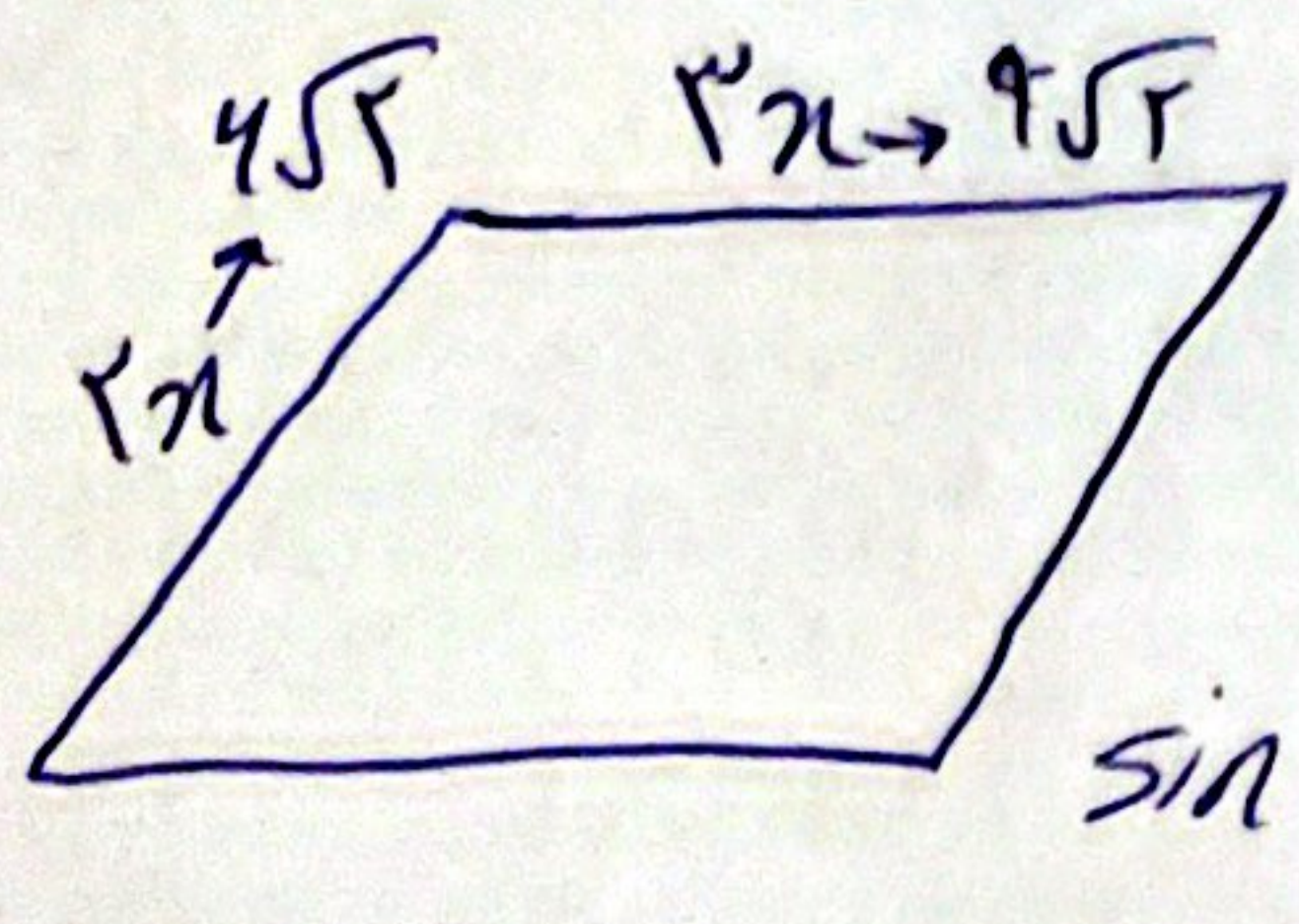


$$S_{\Delta} = \frac{1}{2} ab \sin \alpha \rightarrow \frac{1}{2} \times \frac{15}{4} \times \sqrt{3} \times \sin \alpha = \frac{15}{4} \rightarrow \sin \alpha = \frac{15}{15\sqrt{3}} = \frac{1}{\sqrt{3}}$$

$$\frac{15}{4} = 15 \rightarrow \sin \alpha = \frac{\sqrt{3}}{3} \rightarrow \alpha = 9.61^\circ$$



$$S_{\Delta} = ab \sin \alpha \rightarrow 4\sqrt{3} \times \frac{1}{2} = 15$$

$$2\sqrt{3} = 15 \rightarrow x = \sqrt{15} = 3\sqrt{3}$$

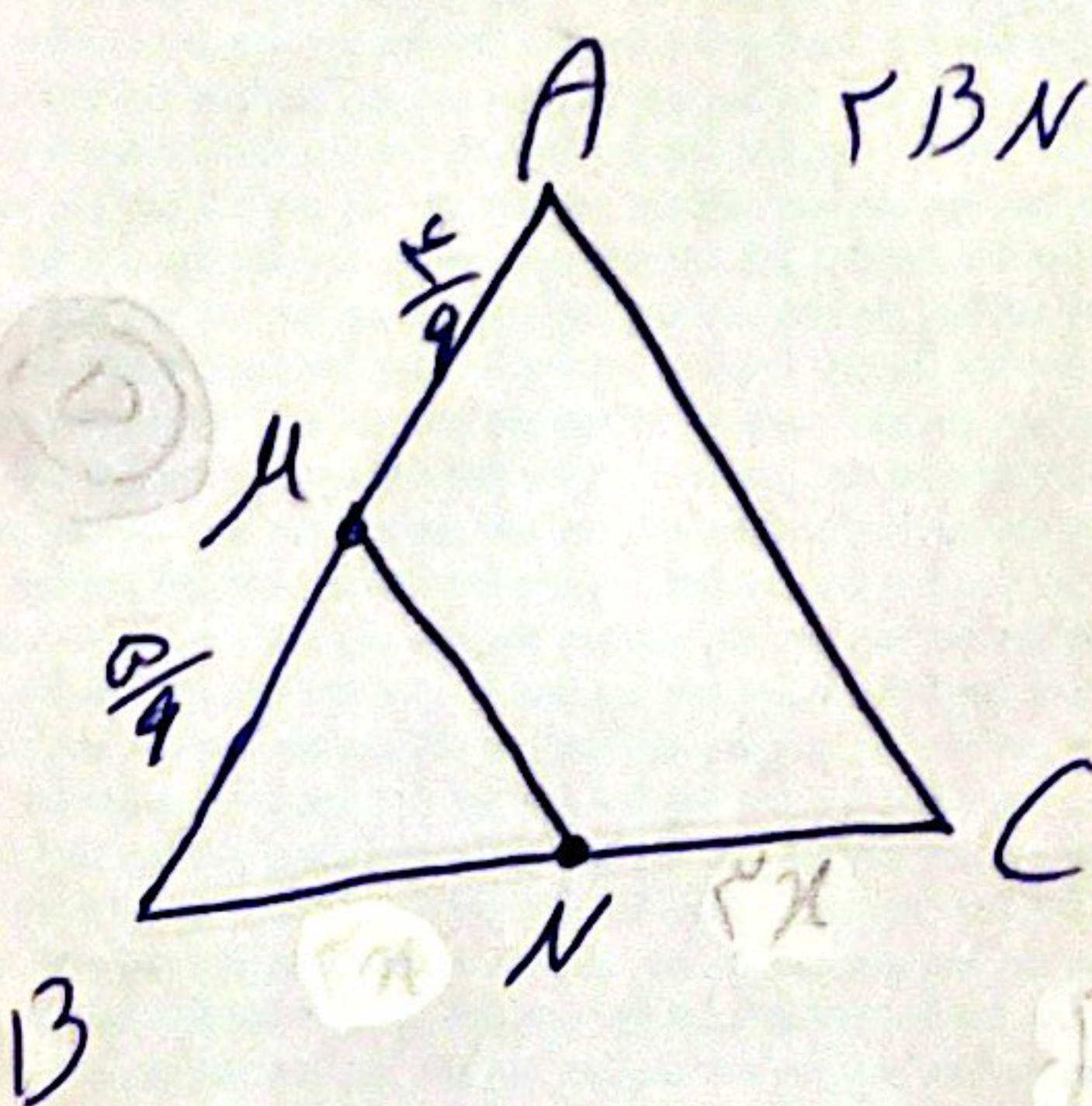
$$P = (a+b) \times r = (9\sqrt{3} + 4\sqrt{3}) \times r = 3\sqrt{3}$$

$$S_{ABC} - S_{ADE} = 11\sqrt{3} \quad \tan A = ? \rightarrow \sin, \cos = ?$$

$$\frac{1}{2} \times 10 \times V \times \sin A - \frac{1}{2} \times 4 \times V \times \sin A = \frac{11\sqrt{3}}{2}$$

$$\sin A \left(\frac{10-4}{2} \right) = \frac{11\sqrt{3}}{2} \rightarrow \sin A = \frac{11\sqrt{3}}{3} = \frac{2 \times 11\sqrt{3}}{2 \times 3} = \frac{1}{2}$$

$$\cos A \Rightarrow 1 - \sin^2 = \cos^2 \rightarrow 1 - \frac{1}{4} = \frac{3}{4} \rightarrow \cos A = \frac{\sqrt{3}}{2} \rightarrow \tan = \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}}$$



$$2BN = 3MC \rightarrow \frac{2}{3} BN = MC \rightarrow BC = BN + \frac{2}{3} BN = \frac{5}{3} BN$$

$$\frac{S_{ABC}}{S_{BMN}} = 3 \rightarrow \frac{\frac{1}{2} AB \times \frac{2}{3} BN \times \sin B}{\frac{1}{2} \times BM \times BN \times \sin B} = 3$$

$$\frac{AB}{BM} = \frac{3}{1} \rightarrow \frac{AB}{BM} = \frac{3}{1} \rightarrow BM = \frac{1}{3} AB$$

$$\frac{BM}{AM} = 2 = \frac{1}{2} = \frac{1}{2}$$

$$|\sin| = -\sin \rightarrow \frac{|\sin|}{\cos} = -\tan \rightarrow \sin = -$$

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

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

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$$\rightarrow \cos = -$$

①

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

$$\text{ب) } -\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{2} + \left(-\frac{1}{2} \right) = \frac{1}{2} - \frac{1}{2} = 0$$

②

$$\cot = f \rightarrow \frac{\cos}{\sin} = f \rightarrow \cos = f \sin$$

$$\frac{12 \sin - \sin}{f \sin + \sin} = \frac{11 \sin}{\omega \sin} = \frac{11}{\omega}$$

③

$$\sin, \cos = -$$

$$\sin = 2 \cos$$

$$\sin^2 + \cos^2 = 1$$

$$(2 \cos)^2 + \cos^2 = 1 \rightarrow 4 \cos^2 + \cos^2 = 1 \rightarrow 5 \cos^2 = 1$$

$$\cos^2 = \frac{1}{5} \rightarrow \cos = -\frac{1}{\sqrt{5}}$$

④

$$\text{الف) } 1 - \sin^2 = \cos^2 \rightarrow 1 - \frac{2}{10} = \frac{8}{10} \rightarrow \cos = \pm \frac{\sqrt{80}}{10} = \frac{-\sqrt{2}}{10}$$

$$\cos\left(\frac{11\pi}{6} + \alpha\right) \rightarrow \cos \frac{11\pi}{6} \times \cos \alpha - \sin \frac{11\pi}{6} \times \sin \alpha = \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{10} - \frac{1}{2} \times \frac{\sqrt{2}}{10}$$

$$= \frac{1\sqrt{6}}{20} - \frac{1\sqrt{2}}{20} = \frac{1\sqrt{2}}{20} = \frac{1}{20}$$

⑤

$$\text{ب) } \tan = \frac{1}{\sqrt{3}} \rightarrow 1 + \tan^2 = \frac{1}{\cos^2} \rightarrow 1 + \frac{1}{3} = \frac{4}{3} \rightarrow \cos^2 = \frac{3}{4}$$

$$\sin^2 = 1 - \frac{3}{4} = \frac{1}{4} \rightarrow \sin = \pm \frac{1}{2}$$

$$\cos = \pm \frac{\sqrt{3}}{2}$$

$$\sin\left(\frac{13\pi}{6} + \alpha\right) = \cos \frac{13\pi}{6} \times \sin \alpha + \sin \frac{13\pi}{6} \times \cos \alpha = \frac{\sqrt{3}}{2} \times \frac{1}{\sqrt{2}} + \frac{1}{2} \times \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}$$

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

⑥

$$2 \sin^2 + \cos^2 = \frac{5}{4} \rightarrow 2 \sin^2 + 1 - \sin^2 = \frac{5}{4} \rightarrow \sin^2 + 1 = \frac{5}{4} \rightarrow \sin^2 = \frac{1}{4}$$

$$1 + \cot^2 = \frac{1}{\sin^2} \rightarrow 1 + \cot^2 = 4 \rightarrow \cot^2 = 3 \rightarrow \cot = \sqrt{3} \rightarrow \tan = \frac{1}{\sqrt{3}}$$