

الف) $\tan(3\pi - \frac{\pi}{6}) + \sin(4\pi - \frac{\pi}{6}) \times \cos(3\pi + \frac{\pi}{6})$

$= -\tan(\frac{\pi}{6}) + (-\sin(\frac{\pi}{6}) \times -\cos(\frac{\pi}{6})) = -1 + \frac{1}{2} = -\frac{1}{2}$

ب) $\tan(3\pi - \frac{\pi}{6}) \times \sin(4\pi - \frac{\pi}{6}) + \cos(3\pi + \frac{\pi}{6}) \rightarrow (-\tan(\frac{\pi}{6}) \times -\sin(\frac{\pi}{6})) - \cos(\frac{\pi}{6})$
 $= \frac{1}{2} - \frac{1}{2} = 0$

سینوس و کسینوس $\rightarrow \frac{3\cot n - 1}{\cot n + 1} \rightarrow \frac{3(4) - 1}{4 + 1} = \frac{11}{5} = 2.2$

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

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

الف) $\cos(\pi + \frac{\pi}{6} + \alpha) \Rightarrow \cos(\frac{7\pi}{6} + \alpha) \rightarrow \cos \frac{7\pi}{6} \times \cos \alpha - \sin \frac{7\pi}{6} \times \sin \alpha$

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

ب) $\sin(\pi + \frac{\pi}{6} + \alpha) = \sin(\frac{7\pi}{6} + \alpha) \rightarrow \sin \frac{7\pi}{6} \times \cos \alpha + \sin \alpha \times \cos \frac{7\pi}{6}$
 $= -\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} + \sin \alpha \times (-\frac{1}{2}) = -\frac{3}{4} - \frac{1}{2} \sin \alpha = -\frac{4}{4} = -1$

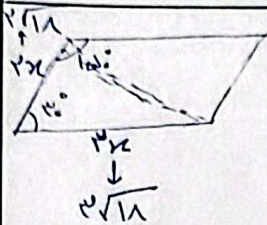
$\sin^2 n = 1 - \cos^2 n \rightarrow 2(1 - \cos^2 n) + \cos^2 n = \frac{4}{5} \rightarrow \cos^2 n = \frac{4}{5}$

$1 + \tan^2 n = \frac{1}{\cos^2 n} \rightarrow 1 + \tan^2 n = \frac{5}{4} \rightarrow \tan^2 n = \frac{1}{4}$

$$S_{\triangle} = \frac{1}{2} \times 4 \times \sqrt{3} \times \sin \alpha = f_1 a$$

$$3\sqrt{3} \sin \alpha = f_1 a \rightarrow \sin \alpha = \frac{f_1 a}{3\sqrt{3}} = \frac{f_1 a \sqrt{3}}{9} = \frac{\sqrt{3}}{3}$$

$$\frac{120^\circ}{40^\circ} = \boxed{3} \leftarrow \begin{matrix} 40^\circ \\ 120^\circ \end{matrix} \alpha \leftarrow \sigma_c$$



$$\left(\frac{1}{2} \times 4 \times \sqrt{3} \times \sin 40^\circ \right) \times P = a f$$

$$4\sqrt{3} \times \frac{1}{2} \rightarrow 2\sqrt{3} = a f \rightarrow \sqrt{3} = 1 \rightarrow \sqrt{3} = 1$$

$$P = (2\sqrt{3} + 2\sqrt{3}) \times P = \boxed{4\sqrt{3}}$$

$$S_{ABC} = \frac{1}{2} \times a \times v \times \sin \hat{A}$$

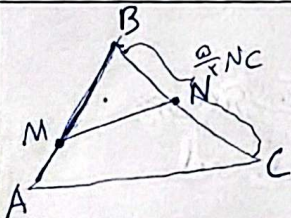
$$= \frac{3a}{2} \sin \hat{A} = 1.5a \sin \hat{A}$$

$$S_{ADE} = \frac{1}{2} \times f \times v \times \sin \hat{A}$$

$$= \frac{1}{2} f \sin \hat{A}$$

$$1.5a \sin \hat{A} - \frac{1}{2} f \sin \hat{A} = 1.5a \rightarrow 3 \sin \hat{A} = 1.5a \rightarrow \sin \hat{A} = 0.5a = \frac{1}{2}$$

$$\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{f}{3} \leftarrow A < 30^\circ \leftarrow \sigma_c \leftarrow \text{مساحة المثلث}$$



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

$$S_{ABC} = \frac{1}{2} \times \frac{5}{2} NC \times AB \times \sin \hat{B} = \frac{5}{4} \left(\frac{1}{2} \times \frac{3}{2} NC \times MB \times \sin \hat{B} \right)$$

$$\frac{5}{4} NC \times AB \times \sin \hat{B} = \frac{15}{8} NC \times MB \times \sin \hat{B} \quad S_{BMN}$$

$$(BM + AM)$$

$$\frac{5}{4} BM + \frac{5}{4} AM = \frac{15}{8} MB \rightarrow \frac{5}{4} AM = MB \Rightarrow \frac{BM}{AM} = \frac{5}{4}$$

$$\frac{|\sin \alpha|}{\cos \alpha} < -\frac{1}{\cot \alpha} \rightarrow \frac{|\sin \alpha|}{\cos \alpha} = \frac{-\sin \alpha}{\cos \alpha} \Rightarrow \sin \alpha < 0$$

$$\frac{1}{\sqrt{\cos^2 \alpha}} = \frac{1}{|\cos \alpha|} \rightarrow \tan \alpha = \frac{1 + \sin \alpha}{1 - \cos \alpha} \rightarrow \tan \alpha = \frac{-\sin \alpha}{1 - \cos \alpha}$$

$$\begin{matrix} \cos 70^\circ \rightarrow \tan \alpha = -\tan 70^\circ \\ \cos 110^\circ \rightarrow \tan \alpha = \tan 70^\circ \end{matrix}$$

$$\Rightarrow \cos \alpha < 0, \sin \alpha < 0 \rightarrow \boxed{\alpha = 110^\circ}$$