

۱) $\tan \frac{11\pi}{4} + \sin \frac{10\pi}{4} \cos \frac{15\pi}{4}$
 $\left(\frac{11\pi}{4} - \frac{\pi}{4} \right) \quad \left(\frac{10\pi}{4} - \frac{\pi}{4} \right) \quad \left(\frac{15\pi}{4} + \frac{\pi}{4} \right)$
 $\tan \left(-\frac{\pi}{4} \right) + \sin \left(-\frac{\pi}{4} \right) \times \cos \left(\frac{16\pi}{4} \right)$
 $= -1 + \left(-\frac{\sqrt{2}}{2} \times -\frac{\sqrt{2}}{2} \right) = -1 + \frac{1}{2} = \boxed{-\frac{1}{2}}$

۲) $\tan \frac{17\pi}{4} \sin \frac{11\pi}{4} + \cos \frac{10\pi}{4}$
 $\left(\frac{17\pi}{4} - \frac{\pi}{4} \right) \quad \left(\frac{11\pi}{4} - \frac{\pi}{4} \right) \quad \left(\frac{10\pi}{4} + \frac{\pi}{4} \right)$
 $-\tan \left(\frac{\pi}{4} \right) \times \sin \left(-\frac{\pi}{4} \right) + \cos \left(\frac{11\pi}{4} \right)$
 $= -\frac{\sqrt{2}}{2} \times -\frac{\sqrt{2}}{2} - \frac{1}{2} = \frac{1}{2} - \frac{1}{2} = \boxed{0}$

$\frac{\frac{\cos x - \sin x}{\sin x}}{\frac{\cos x + \sin x}{\sin x}} = \frac{\cos x - 1}{\cos x + 1} = \boxed{\frac{11}{5}}$
 $\cot x = \frac{11}{5}$

$\tan^2 a + 1 = \frac{1}{\cos^2 a} \quad \Rightarrow \cos^2 a = \frac{1}{\tan^2 a + 1}$
 $\Rightarrow \cos a = -\frac{\sqrt{5}}{5}$

۳) $\cos a = \frac{3}{5}$ و $\sin a = \frac{4}{5}$ پس $\tan a = \frac{\sin a}{\cos a} = \frac{4}{3}$

۴) $\cos \left(\frac{7\pi}{4} + a \right) = \cos \frac{7\pi}{4} \cos a - \sin \frac{7\pi}{4} \sin a$
 $= \left(-\frac{\sqrt{2}}{2} \right) \times \left(-\frac{\sqrt{5}}{5} \right) - \left(\frac{\sqrt{2}}{2} \right) \times \left(\frac{4}{5} \right)$
 $= \frac{\sqrt{10}}{10} - \frac{4\sqrt{2}}{10} = \frac{\sqrt{10} - 4\sqrt{2}}{10}$

۵) $\sin \left(\frac{11\pi}{4} + a \right) = \sin \frac{11\pi}{4} \cos a + \cos \frac{11\pi}{4} \sin a$
 $= \left(-\frac{\sqrt{2}}{2} \right) \times \left(\frac{\sqrt{5}}{5} \right) + \left(\frac{1}{2} \right) \times \left(-\frac{4}{5} \right)$
 $= -\frac{\sqrt{10}}{10} - \frac{4}{10} = -\frac{\sqrt{10} + 4}{10}$

۶) $\sin^2 x + \cos^2 x = 1$
 $\Rightarrow \cos x = -\frac{\sqrt{10}}{10} = -\frac{\sqrt{2}}{10}$
 $\Rightarrow \cos x = \frac{\sqrt{2}}{10}$
 $\Rightarrow \sin x = \frac{1}{\sqrt{2}}$

۷) $\tan^2 x + 1 = \frac{5}{4} (1 + \tan^2 x)$
 $\frac{4}{5} \tan^2 x + 1 = \frac{5}{4} + \frac{5}{4} \tan^2 x$
 $\frac{4}{5} \tan^2 x = \frac{1}{4} \Rightarrow \tan^2 x = \frac{1}{4}$

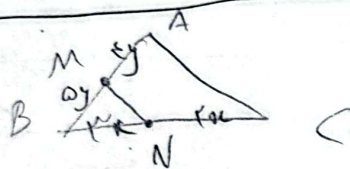
$$\frac{1}{F} \times 4 \times \sqrt{F} \times \sin a = \frac{4}{F} \Rightarrow \sin a = \frac{\sqrt{F}}{F} \Rightarrow a = \textcircled{40^\circ}, \textcircled{140^\circ} \quad -9$$

$\frac{P_M}{P_N} \times \frac{P_M}{P_N} \times \frac{\sin 10^\circ}{\frac{1}{F}} = \frac{P_M}{P_N} = \omega F = \gamma \quad n = 18$
 $\Rightarrow n = 4\sqrt{F}$
 $P = 9, \log n = \boxed{2.55}$

$$S_{ABE} - S_{ADE} = \frac{1}{F} \times \omega \times v \times \sin \hat{A} - \frac{1}{F} \times v \times \epsilon \times \sin \hat{A} = \left(\frac{\omega}{F} - \frac{\epsilon}{F} \right) (\sin \hat{A}) = \frac{1}{F} \omega \sin \hat{A}$$

$$\frac{v}{F} \sin \hat{A} = \frac{v}{F} \Rightarrow \sin \hat{A} = \frac{1}{F}$$

$$\Rightarrow \hat{A} = \frac{\pi}{6} \Rightarrow \tan \hat{A} = \frac{\sqrt{F}}{F}$$



$$\frac{BN}{NM} = \frac{NC}{NM}$$

$$\frac{BM}{AM} = 9$$

$$\frac{S_{ABC}}{S_{BMN}} = \frac{AB \times BC \times \sin B}{BM \times BN \times \sin B} = \frac{AB}{BM} \times \frac{BC}{BN} = 9 \Rightarrow \frac{AB}{BM} = \frac{4}{9}$$

$$\Rightarrow \frac{BM}{AB} = \frac{5}{9}$$

$$BM = 20g, AB = 40g \Rightarrow AM = 20g$$

$$\Rightarrow \frac{BM}{AM} = \frac{20g}{20g} = \boxed{\frac{5}{5}}$$

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

$$\frac{-\sin a}{|\cos a|} = \Rightarrow \cos a < 0$$

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

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$$\frac{|\sin a|}{\cos a} = -\tan a \Rightarrow \sin a < 0$$