Date: Sub:

(1)

$$\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{3}}{2}\right)\left(\left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{3}}{2}\right)\right)\right) \rightsquigarrow \frac{2}{4} - \frac{3}{4} = \frac{1}{4}$$

$$\frac{1 + 3\left(\frac{\sqrt{2}}{2}\right)^2}{2\left(-\frac{\sqrt{3}}{2}\right)^2 + 4\left(\frac{\sqrt{3}}{2}\right)} = \frac{1 + 3 \times \frac{2}{4}}{4 \times \frac{3}{4} + 2 \times \frac{2}{2}} = \frac{1}{2}$$

(2)

الف) $\sin 45^\circ = \frac{\sqrt{2}}{2} \rightarrow \sqrt{18} = 2AH$ $\quad \frac{2\sqrt{3}}{2} = \sqrt{3}$ $\quad (\sqrt{2})^2 + x^2 = (2\sqrt{2})^2$

$3 + HC^2 = 4 \times 3 \rightarrow HC^2 = 9 \rightsquigarrow HC = 3$

ب) $\tan 30^\circ = \frac{\sqrt{3}}{2} \rightarrow AH \rightarrow 3\sqrt{2} \rightsquigarrow \frac{6\sqrt{3}}{3}$ $\sin = \frac{3\sqrt{2}}{2\sqrt{6}} = \frac{\sqrt{2}}{2} \rightarrow 45$

(3)

الف) $\sin 30^\circ = \frac{50\sqrt{2}}{AC} \rightarrow AC \rightarrow 100\sqrt{2}$ $\Big\}$ $\tan 60^\circ = \frac{50\sqrt{2}}{BD} = \sqrt{3}$

$\frac{1}{2}$

$\frac{50\sqrt{3}}{\sqrt{3}} = 50 \rightsquigarrow (50\sqrt{3})^2 + x^2 = (100\sqrt{2})^2$

$30000 - 7500 \rightarrow BC = 150$ $\Big\}$ $x = 100$

(3)

ب) $\tan 60 = \sqrt{3} \rightarrow \frac{BC}{2} \rightarrow 2\sqrt{13}$

$1 + (2\sqrt{3})^2 = 13 \rightarrow BC^2 \rightarrow DC = \sqrt{13}$ $\quad \sin\alpha = \frac{1}{\sqrt{13}} \times \frac{\sqrt{13}}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

(4)

$$\frac{BC}{\frac{\sqrt{2}}{2}} = \frac{AC}{\frac{1}{2}} \rightarrow \frac{AB}{AC} = \frac{\sqrt{6} + \sqrt{2}}{2}$$

$$\frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2} + \left(\frac{1}{2} \times \frac{\sqrt{2}}{2}\right) = \frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{8} = \frac{\sqrt{6} + \sqrt{2}}{4}$$

$\sin 105 = \sin(60 + 45) = \sin 60 \cos 45 + \cos 60 \sin 45$

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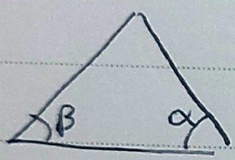
$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{۲}\times ۲\times ۴\times \sin B}{\frac{1}{۲}\times ۳\times ۶\times \sin B} = \frac{۴}{۹}$ ⑤

الف) $\frac{1}{۲}\times ۴\times ۳\times \sin ۱۲۰^\circ = ۳\sqrt{۳}\times ۲ = ۶\sqrt{۳}$ ⑥

ب) $\frac{1}{۲}\times ۳\times ۴\times \frac{\sqrt{۳}}{۲} = ۳\sqrt{۳}$

$\cos\alpha = \frac{۲}{\sqrt{۸}} \to \frac{۲}{۲\sqrt{۲}} \to \frac{\sqrt{۲}}{۲}$ ⑦



$m = \tan ۶۰ = \sqrt{۳}$ $\alpha = ۱۸۰ - (۴۵ + ۷۵) = ۶۰$ ⑧

$y = x + \frac{۵}{۲}$ $\frac{۵}{۲}\times\sqrt{۳} = \frac{۵\sqrt{۳}}{۲}$

$x = 1$

$\beta = ۴۵^\circ$ $x = 0 \to y = \frac{۵}{۲} \to y = \frac{۵}{۲} \Big\} \frac{۵}{۲} = \sqrt{۳}x + b \Big\} b = \frac{۵}{۲}$

$-\cos x + \cos x + \cot(x) = \cot x \to \cot\left(۵\frac{x}{۶}\right) = -\sqrt{۳}$ ⑨

$\left(۷\frac{x}{۲} + x\right) = \left(۸x + \frac{x}{۲} + x\right) \to \left(\sin\frac{x}{۲} + x\right) = \cos x$

$\frac{\cos x - \sin(x)}{-\cos x - (-\sin x)} = \frac{\cos x - \sin x}{-(\cos x - \sin x)} = -1$