

نام و نام خانوادگی: ...
 پستنامه تشریحی تکلیف شماره ۱۵۰... کلاس: ...

الف) $(\sin 114^\circ + \sin 150^\circ)(\cos 114^\circ - \cos 150^\circ) = \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right)$

ب) $\left(\frac{\sqrt{2}}{2}\right)^2 - \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4} - \frac{2}{4} = \boxed{-\frac{1}{2}}$

ج) $\frac{1 + 3 \tan 110^\circ}{4 \cos 110^\circ + 2 \cos 114^\circ} = \frac{1 + 3 \left(\frac{\sqrt{3}}{2}\right)^2}{4 \left(\frac{\sqrt{2}}{2}\right)^2 + 2 \left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1 + 1}{4 \times \frac{2}{4} + 2 \times \frac{2}{4}} = \frac{2}{4} = \boxed{\frac{1}{2}}$

الف) $\triangle ABH: \sin 45^\circ = \frac{AH}{AB} \Rightarrow \frac{\sqrt{2}}{2} = \frac{AH}{\sqrt{2}} \Rightarrow AH = \sqrt{2}$

$\triangle AHC: AC' = AH \times HC' \Rightarrow 12 = \sqrt{2} + HC' \Rightarrow HC' = \sqrt{12 - \sqrt{2}} = \sqrt{2}$

ب) $\triangle AHC: \tan 30^\circ = \frac{AH}{HC} \Rightarrow \frac{\sqrt{2}}{2} = \frac{AH}{9} \Rightarrow AH = \frac{9 \times \sqrt{2}}{2} = 9\sqrt{2}$

$\Rightarrow \sin B = \frac{9\sqrt{2}}{12} = \frac{\sqrt{2}}{4} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{2}{4} = \frac{1}{2} \Rightarrow \boxed{B = 45^\circ}$

الف) $\triangle ABD: \tan 40^\circ = \frac{AB}{BD} \Rightarrow \sqrt{2} = \frac{50\sqrt{2}}{BD} \Rightarrow BD = 50$

$\Rightarrow 11 = BC - BD = 150 - 50 = \boxed{100}$

ب) $\triangle ABC: \tan 40^\circ = \frac{BC}{AB} \Rightarrow \sqrt{2} = \frac{BC}{9} \Rightarrow BC = 9\sqrt{2}$

$1 + \frac{1}{\sqrt{2}} \Rightarrow DC = \sqrt{12} \Rightarrow \sin \alpha = \frac{1}{\sqrt{12}} = \frac{\sqrt{12}}{12}$

$\sin 2\alpha = \frac{1 - \cos 4\alpha}{2} \Rightarrow \sin 10^\circ = \frac{1 - \cos 110^\circ}{2} = \frac{1 + \sqrt{2}}{2} \Rightarrow \sin 10^\circ = \frac{\sqrt{2 + \sqrt{2}}}{2}$

$\frac{AB}{\sin 10^\circ} = \frac{AC}{\sin 70^\circ} \Rightarrow \frac{AB}{AC} = \frac{\sin 10^\circ}{\sin 70^\circ}$

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

$\frac{S_{ABE}}{S_{BCD}} = \frac{\sin B \times \frac{1}{2} \times EB \times AB}{\sin B \times \frac{1}{2} \times BC \times BD} = \frac{2 \times 2}{4 \times 2} = \boxed{\frac{1}{2}}$

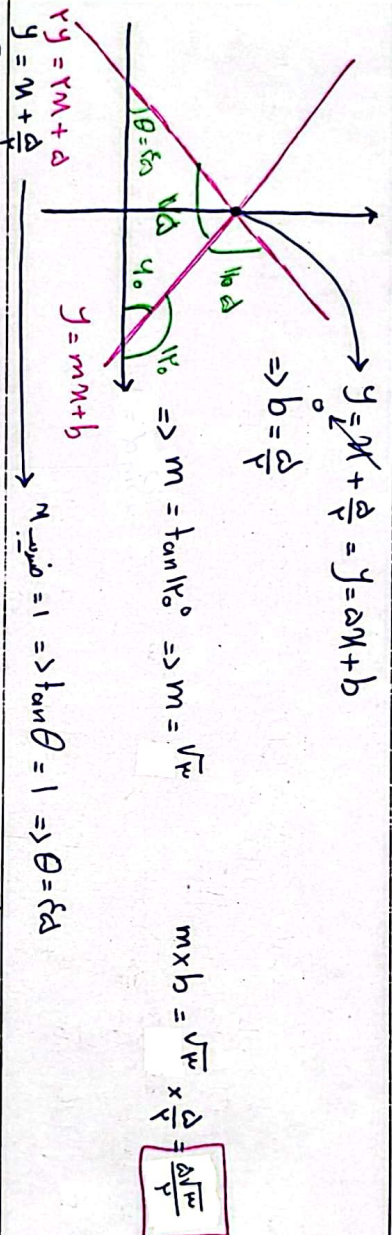
ب) $B_1 = B_2$

$$\text{ا) } S = S_m |k_0| \times |k_x|^2 = \frac{1}{p} \times \xi \times \eta = \boxed{\frac{y}{\sqrt{p}}}$$

$$\text{ب) } S = \xi \left(\frac{1}{p} \times S_m |k_0| \times \frac{\eta}{p} \times \frac{\xi}{p} \right) = \boxed{\frac{\eta \sqrt{p}}{p}}$$

$$\tan \theta = \frac{\xi - \eta}{\eta - (-1)} = \frac{1}{p} \quad \leftarrow \text{نسبة خط}$$

$$\tan^2 \theta + 1 = \frac{1}{\cos^2 \theta} \Rightarrow \frac{1}{\xi} + 1 = \frac{\xi}{\eta} = \frac{1}{\cos^2 \theta} \Rightarrow \boxed{\cos \theta = \frac{\eta}{\sqrt{p}}}$$



$$f\left(\frac{\Delta T}{q}\right) = \cos\left(\frac{\Delta T}{q} + \pi\right) + S_m \left(\frac{\pi}{p} - \frac{\Delta T}{q}\right) - \tan\left(\frac{\eta \pi}{p} + \frac{\Delta T}{q}\right)$$

$$= \cos\left(\frac{\Delta T}{q}\right) - \cos\left(\frac{\Delta T}{q}\right) - \tan\left(\frac{\pi}{p}\right) = \boxed{-\sqrt{p}}$$

$$\frac{S_m \left(\frac{\eta \pi}{p} + \eta\right) + \cos\left(\frac{\Delta T}{p} - \eta\right)}{\cos\left(\frac{\eta \pi}{p} + \eta\right) - S_m \left(\frac{\Delta T}{p} - \eta\right)} = \frac{S_m \left(\frac{\pi}{p} + \eta\right) + \cos\left(\frac{\eta \pi}{p} - \eta\right)}{\cos\left(\frac{\eta \pi}{p} + \eta\right) - S_m \left(\frac{\eta \pi}{p} - \eta\right)}$$

$$= \frac{\cos \eta - S_m \eta}{- \cos \eta + S_m \eta} = \boxed{-1}$$