

الف) $(\sin 135^\circ + \sin 45^\circ)(\cos 135^\circ - \cos 45^\circ) = \left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right)\right)\left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{2}}{2}\right)\right) = \left(\frac{\sqrt{2}-\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}+\sqrt{2}}{2}\right)$
 $\rightarrow \frac{2}{2} - \frac{2}{2} = \boxed{\frac{-1}{2}}$

ب) $\frac{1 + 2 \tan^2 45^\circ}{\sec^2 45^\circ + \csc^2 45^\circ} = \frac{1 + 2\left(\frac{\sqrt{2}}{2}\right)^2}{\left(\frac{\sqrt{2}}{2}\right)^2 + 2\left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1+1}{\frac{2}{2} + 1} = \frac{2}{2} = \boxed{\frac{1}{1}}$

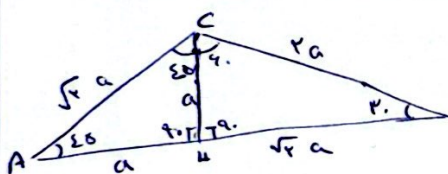
الف) $\frac{AH}{\sqrt{4}} = \sin 45^\circ \rightarrow \frac{AH}{\sqrt{4}} = \frac{\sqrt{2}}{2} \rightarrow AH = \sqrt{2}$, $(HC)^2 = (AC)^2 - (AH)^2 \rightarrow (HC)^2 = 12 - 2 = 10$
 $\rightarrow HC = \sqrt{10}$

ب) $\frac{HC}{AC} = \sin 45^\circ \rightarrow \frac{9}{AC} = \frac{\sqrt{2}}{2} \rightarrow AC = 9\sqrt{2}$, $\frac{AH}{AC} = \sin 45^\circ \rightarrow \frac{AH}{9\sqrt{2}} = \frac{1}{\sqrt{2}} \rightarrow AH = 9$

$(BH)^2 = (AB)^2 - (AH)^2 \rightarrow (BH)^2 = 25 - 20 = 5 \rightarrow BH = \sqrt{5} \rightarrow BH = AH$, $\hat{H} = 90^\circ$
 $\rightarrow \hat{B} = \hat{A} = 45^\circ \rightarrow \boxed{\hat{B} = 45^\circ}$

الف) $\frac{AB}{AC} = \sin 45^\circ \rightarrow \frac{2\sqrt{2}}{AC} = \frac{1}{\sqrt{2}} \rightarrow AC = 4\sqrt{2}$, $(BC)^2 = (AC)^2 - (AB)^2 = 32 - 8 = 24$
 $\rightarrow BC = 2\sqrt{6}$, $\frac{BD}{AB} = \cos 45^\circ \rightarrow \frac{BD}{2\sqrt{2}} = \frac{\sqrt{2}}{2} \rightarrow BD = 2$, $AD = BD - BD = 2 - 2 = 0$
 $\rightarrow \boxed{x = 100}$

ب) $AC = 2$, $(BC)^2 = (AC)^2 - (AB)^2 = 14 - 2 = 12 \rightarrow BC = 2\sqrt{3}$
 $c + \alpha = 2\sqrt{3} \rightarrow 1 + c + \alpha = \frac{1}{\sin \alpha} \rightarrow 1 + 11 = \frac{1}{\sin \alpha} \rightarrow \sin \alpha = \frac{\sqrt{3}}{12}$



$BC = a$, $CH = \frac{\sqrt{2}}{2} \times a = \frac{\sqrt{2}}{2} a$
 $AB = a + a = 2a$
 $\frac{AB}{AC} = \frac{a + \sqrt{2}a}{\sqrt{2}a} = \boxed{\frac{\sqrt{2} + \sqrt{2}}{2}}$

$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times 1 \times 2 \times \sin 60^\circ}{\frac{1}{2} \times 2 \times 1 \times \sin 60^\circ} = \boxed{\frac{1}{2}}$

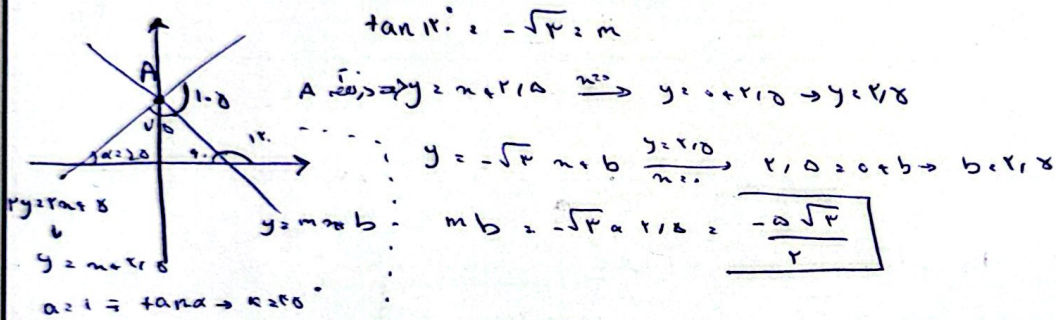
$$\text{الف } \cancel{\frac{1}{x}} \times \frac{1}{x} \times a \times b \times \sin 12^\circ = 3 \times 2 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}$$

$$b) \sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \frac{\pi}{4}$$

$$y: a \rightarrow b \rightarrow r \rightarrow r \rightarrow b$$
$$\frac{-r \rightarrow a \rightarrow b}{r \rightarrow r \rightarrow a \rightarrow b} \quad \frac{1}{r}, \tan \theta, \frac{1}{r}$$

$$\tan^2 \theta_2 = \frac{1}{\cos^2 \theta} \Rightarrow \ln \frac{1}{2} = \frac{1}{\cos^2 \theta} \Rightarrow \cos^2 \theta = \frac{1}{2} \Rightarrow \cos \theta = \pm \frac{1}{\sqrt{2}}$$

فقط مقدار $\frac{2}{15}$ درست است زیرا ۱۰ حاره و در نامه اول است.



$$f(x) = -C \cdot S(x) + C \cdot S(x) - (-C \cdot t(x)) = C \cdot t(x)$$

$$f\left(\frac{\Delta\pi}{4}\right)_2 \subset \underbrace{f\left(\frac{\Delta\pi}{4}\right)_2}_{10^\circ} \overline{-\sqrt{4}}$$

$$\frac{\sin\left(\frac{14\pi}{5} + n\right) + \cos\left(\frac{12\pi}{5} - n\right)}{\cos(4\pi + n) - \sin(4\pi - n)} = \frac{\sin\left(\frac{\pi}{5} + n\right) + \cos\left(\frac{\pi}{5} - n\right)}{\cos(\pi + n) - \sin(\pi - n)}$$

$$2 \frac{\cos(n) - \sin(n)}{-\cos(n) + \sin(n)} = \boxed{-1}$$