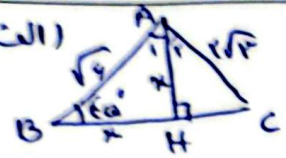
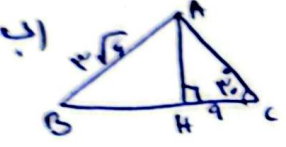


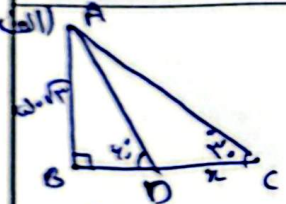
نام و نام خانوادگی: کلاس: شماره: تکلیف شماره: پاسخامه تشریحی

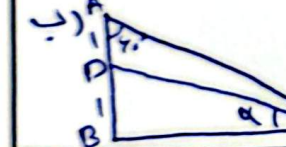
الف) $(\frac{\sqrt{2}}{2} + (-\frac{\sqrt{2}}{2}))(\frac{\sqrt{2}}{2} - (-\frac{\sqrt{2}}{2})) = \frac{2}{2} - \frac{2}{2} = -\frac{1}{2}$ ✓

ب) $\tan 110^\circ = \frac{\sin 110^\circ}{\cos 110^\circ} = \frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = \frac{\sqrt{3}}{1} \Rightarrow \frac{1 + (\frac{1}{2} \times \frac{\sqrt{3}}{2})}{(\frac{1}{2} \times \frac{\sqrt{3}}{2}) + \frac{1}{2} \times \frac{1}{2}} = \frac{2}{\sqrt{3}}$ ✓

الف)  $\hat{B} = 45^\circ \Rightarrow \hat{A}_1 = 45^\circ \Rightarrow \overline{AH} = \overline{BH} = x \Rightarrow x^2 + x^2 = 4^2 \Rightarrow 2x^2 = 16 \Rightarrow x^2 = 8 \Rightarrow x = \sqrt{8} = 2\sqrt{2}$ ✓

ب)  $\tan 30^\circ = \frac{\sqrt{3}}{3} \Rightarrow \frac{AH}{x} = \frac{\sqrt{3}}{3} \Rightarrow AH = x\sqrt{3}$
 $\sin 60^\circ = \frac{x\sqrt{3}}{4} = \frac{\sqrt{3}}{2} \Rightarrow \hat{B} = 45^\circ$ ✓

الف)  $\tan 45^\circ = \sqrt{2} \Rightarrow \frac{2}{BD} = \sqrt{2} \Rightarrow BD = \sqrt{2}$
 $\tan 30^\circ = \frac{\sqrt{3}}{3} \Rightarrow \frac{2}{\sqrt{2} + x} = \frac{\sqrt{3}}{3} \Rightarrow 2 + x\sqrt{3} = \sqrt{3} \Rightarrow x\sqrt{3} = \sqrt{3} - 2 \Rightarrow x = \frac{\sqrt{3} - 2}{\sqrt{3}}$ ✓

ب)  $\tan 45^\circ = \sqrt{2} \Rightarrow BC = 2\sqrt{2}$
 $\cot \hat{A} = \frac{2\sqrt{2}}{1} = 2\sqrt{2} \quad 1 + \cot \hat{A} = \frac{1}{\sin \hat{A}} \Rightarrow 1 + 2\sqrt{2} = \frac{1}{\sin \hat{A}}$ ✓

$\frac{\overline{AB}}{\sin \hat{C}} = \frac{\overline{AC}}{\sin \hat{B}} \Rightarrow \frac{\overline{AB}}{\sin 100^\circ} = \frac{\overline{AC}}{\sin 30^\circ} \Rightarrow \frac{\overline{AB}}{\sqrt{2+\sqrt{2}}} = \frac{\overline{AC}}{\frac{1}{2}} \Rightarrow \frac{\overline{AB}}{\overline{AC}} = \frac{2(\sqrt{2+\sqrt{2}})}{1} = \frac{\sqrt{2+\sqrt{2}}}{\frac{1}{2}}$ ✓

$\sin 100^\circ = \sin(90^\circ + 10^\circ) = \cos 10^\circ$
 $\cos 10^\circ = \frac{1 + \cos 20^\circ}{2} = \frac{1 + \frac{\sqrt{3}}{2}}{2} = \frac{2 + \sqrt{3}}{4} \Rightarrow \cos 10^\circ = \frac{2 + \sqrt{3}}{4}$ ✓

$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times BE \times AB \times \sin \hat{B}}{\frac{1}{2} \times BC \times BD \times \sin \hat{B}} = \frac{\frac{1}{2} \times 2}{\frac{1}{2} \times 4} = \frac{1}{2}$ ✓

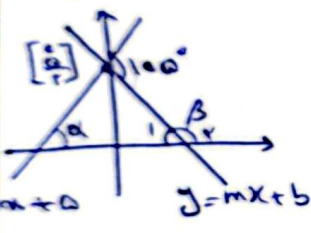
$$\text{ج) } S_{\text{موضوع}} = r \times S_{\text{موضوع}} = r \times \frac{1}{r} \times r \times \sin(120^\circ) = 12 \sin(120^\circ) = 12 \sin(90^\circ + 30^\circ) = 12 \cos(30^\circ) = \frac{12\sqrt{3}}{2} = 6\sqrt{3}$$

$$\text{ب) } S_{\text{موضوع}} = \frac{1}{2} ab \sin \alpha = \frac{1}{2} \times r \times r \times \frac{\sqrt{3}}{r} = r\sqrt{3}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 2}{2 - (-1)} = \frac{1}{3} \Rightarrow \tan \theta = \frac{1}{3}$$

$$1 + \tan^2 \theta = \frac{1}{\cos^2 \theta} \Rightarrow 1 + \frac{1}{9} = \frac{1}{\cos^2 \theta} \Rightarrow \cos^2 \theta = \frac{9}{10} \Rightarrow \cos \theta = \frac{3\sqrt{10}}{10}$$

$$ry = rx + a \Rightarrow y = x + \frac{a}{r} \Rightarrow b = \frac{a}{r} \quad (1)$$



$$\tan \alpha = 1 \Rightarrow \hat{\alpha} = 45^\circ \Rightarrow \hat{\beta} = 45^\circ \Rightarrow \hat{\beta}_r = 45^\circ$$

$$m = \tan \hat{\beta}_r = \tan(45^\circ) = \frac{\frac{\sqrt{r}}{r}}{-\frac{1}{r}} = -\sqrt{r} \quad (2)$$

$$(1), (2) \Rightarrow mb = \frac{a}{r} \times (-\sqrt{r}) = -\frac{a\sqrt{r}}{r} = -\frac{a\sqrt{r}}{r}$$

$$f\left(\frac{a\pi}{9}\right) = \cos\left(\pi + \frac{a\pi}{9}\right) + \sin\left(\frac{\pi}{r} - \frac{a\pi}{9}\right) - \tan\left(\frac{r\pi}{r} + \frac{a\pi}{9}\right)$$

$$= -\cos\left(\frac{a\pi}{9}\right) + \cos\left(\frac{a\pi}{9}\right) + \cot\left(\frac{a\pi}{9}\right) = \cot\left(\frac{a\pi}{9}\right)$$

$$= \frac{-\frac{\sqrt{r}}{r}}{\frac{1}{r}} = -\sqrt{r}$$

$$\frac{\sin\left(\frac{14\pi + \pi}{r} + \alpha\right) + \cos\left(\frac{14\pi + r\pi}{r} - \alpha\right)}{\cos(r\pi + \alpha) - \sin(4\pi - \alpha)}$$

$$= \frac{\sin\left(\frac{\pi}{r} + \alpha\right) + \cos\left(\frac{\pi}{r} - \alpha\right)}{\cos(\pi + \alpha) - \sin(-\pi - \alpha)}$$

$$= \frac{\cos \alpha - \sin \alpha}{-\cos \alpha + \sin \alpha} = -1$$