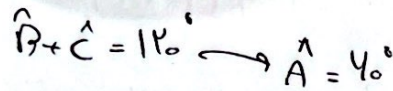


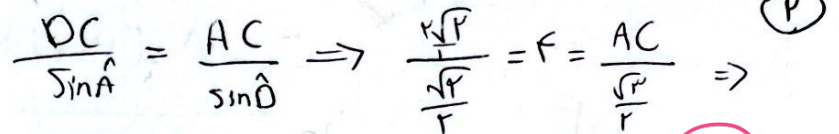
ملکین ساری ۱۳۵
هتر بری، دوازدهم (صد) B

۲۰ آفدیں



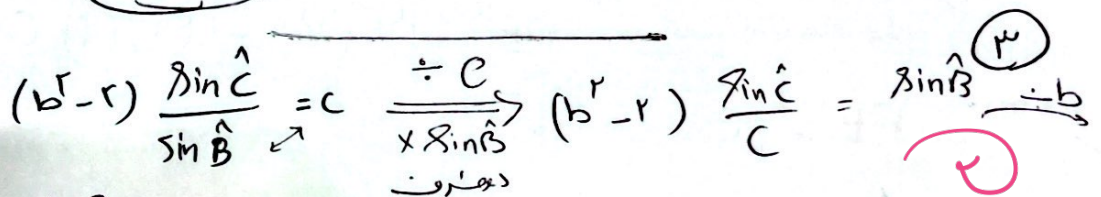
$$\frac{a}{\sin \hat{\alpha}} = \frac{b}{\sin \hat{\beta}} \Rightarrow \frac{r_0}{\frac{\sqrt{r}}{r}} = \frac{\frac{r_0 \sqrt{g}}{r}}{\sin \hat{\beta}} \Rightarrow \text{D}$$

$$\sin \beta = \frac{\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{2}}{\frac{1}{2}} = \frac{\frac{1}{2}}{\frac{1}{2}} = 1 \Rightarrow \beta = 90^\circ$$

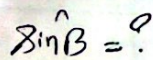


$$BC = x = ? \quad \sin \hat{A} = \sin 40^\circ = \frac{\sqrt{r}}{r} = \frac{x}{AC} = \frac{x}{r\sqrt{r}} \Rightarrow$$

$\mathcal{H} = \mathcal{W}$ ✓

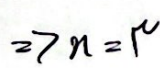


$$\frac{b^r - r}{b} \times \frac{\sin \hat{C}}{c} = \frac{\sin \hat{B}}{b} \Rightarrow \frac{\sin \hat{C}}{c} = \frac{\sin \hat{B}}{b}$$



5

$$\Rightarrow 149 = \varepsilon_{00} + \rho \rho_1 - \gamma(\gamma_0)(\gamma_1) \cos \hat{\beta} \Rightarrow \cos \hat{\beta} = \frac{\varepsilon_{00} + \rho \rho_1 - 149}{\rho \rho_1}$$



$\frac{2}{3}$

$$b = \sqrt{3}$$

$$c = 2(1 + \sqrt{3})$$

$$\hat{A} = 40^\circ$$

$$a^2 = b^2 + c^2 - 2bc(\cos \hat{A})$$

$$a = ? \text{ (الف) } \textcircled{5}$$

$$a^2 = 14 + (2 + \sqrt{3})^2 - 2(2)(\sqrt{3})(1 + \sqrt{3})\left(\frac{1}{2}\right) \Rightarrow$$

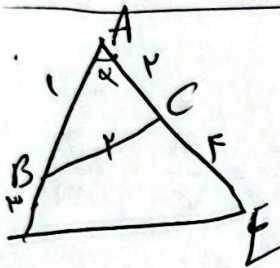
$$a^2 = 14 + 4 + 12 + 4\sqrt{3} - 2 - 4\sqrt{3} = 28$$

$$a = \sqrt{28} = 2\sqrt{7}$$

$$\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} \Rightarrow \frac{2\sqrt{7}}{\frac{\sqrt{3}}{2}} = \frac{2}{\sin \hat{B}} \Rightarrow \sin \hat{B} = \frac{\sqrt{3}}{2} \Rightarrow$$

$$\frac{2\sqrt{7}}{\frac{\sqrt{3}}{2}} = \frac{2(1 + \sqrt{3})}{\sin \hat{C}} \Rightarrow \hat{C} = 110^\circ \text{ (40 + 70)} = 70^\circ$$

$$\hat{B} = 130^\circ \text{ (ممنوع)}$$



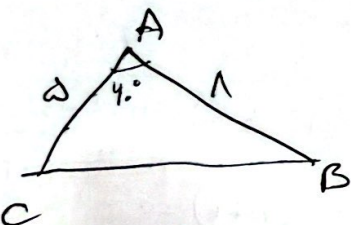
$$\Rightarrow r = 2 + 1 - 2(2)(1)(\cos \hat{A}) \Rightarrow$$

$$2 = 2 - 4\cos \hat{A} \Rightarrow \cos \hat{A} = \frac{1}{2}$$

$$\textcircled{4}$$

$$ADE \text{ قائم الزاوية: } DE^2 = 14 + 14 - 2(7)(7)\left(\frac{1}{2}\right) = 28 - 49 = -21$$

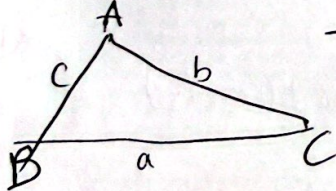
$$DE = \sqrt{28} = 2\sqrt{7}$$



$$BC^2 = 49 + 14 - 2(7)(1)(\cos \hat{A}) =$$

$$\Rightarrow BC^2 = 49 - 14 \Rightarrow BC = 6$$

$$S_{ABC} = \frac{1}{2} AB \times AC \times \sin \hat{A} = \frac{1}{2} \times 1 \times 2 \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$



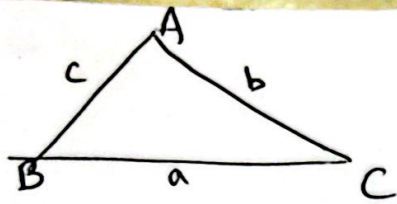
$$\frac{(b+c)^2 - a^2}{bc(\cos \hat{A} + 1)} = \frac{b^2 + c^2 + 2bc - a^2}{bc(\cos \hat{A} + 1)} =$$

$$\frac{b^2 + c^2 + 2bc - (b^2 + c^2 - 2bc \cos \hat{A})}{bc(\cos \hat{A} + 1)} = \frac{2bc + 2bc \cos \hat{A}}{bc(\cos \hat{A} + 1)} = \frac{2bc(1 + \cos \hat{A})}{bc(1 + \cos \hat{A})} =$$

$$a^2 = b^2 + c^2 - 2bc(\cos \hat{A})$$

$$\textcircled{2}$$

ج آخر



$$\frac{a^r + b^r - c^r}{a + b - c} = a^r \quad \text{①}$$

$$a^r + b^r - c^r = a + a(b - c)$$

$$\cos \hat{A} = ?$$

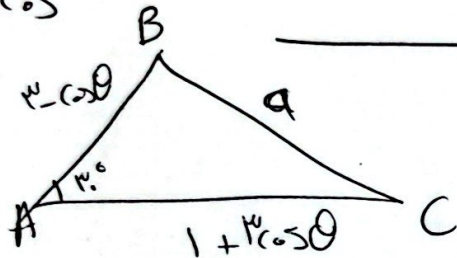
$$a^r + b^r - c^r = a + a(b - c) \Rightarrow (b - c)(b^r + bc + c^r) = a^r(b - c)$$

$$\Rightarrow b^r + c^r + bc = a^r$$

المثلثات المثلثية
cos هاتين

$$\Rightarrow b^r + c^r - 2bc \cos \hat{A} = a^r$$

$$\cos \hat{A} = \frac{1}{2} \Rightarrow \hat{A} = 120^\circ$$



$$S_{ABC} = 1$$

$$a^r = ?$$

1.

$$S_{ABC} = \frac{1}{2} \times \frac{1}{2} (1 + 3 \cos \theta) (3 - \cos \theta) = 1 \Rightarrow 3 - 3 \cos \theta + 9 \cos \theta - \cos \theta = 1$$

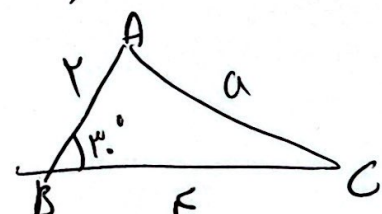
$$\Rightarrow -3 \cos \theta + 1 \cos \theta - 1 = 0 \rightarrow 3 \cos \theta - 1 \cos \theta + 1 = 0 \rightarrow$$

$$\cos \theta - 1 \cos \theta + 1 = 0 \rightarrow (\cos \theta - 1)(\cos \theta - 1) = 0 \rightarrow$$

$$\cos \theta = 1$$

$$\cos \theta = \frac{1}{2}$$

$\Rightarrow$



$$a^r = 8 + 14 - 4(1)(8) \left(\frac{\sqrt{3}}{2} \right) = 20 - 16\sqrt{3}$$