

$$B + C = 135^\circ$$

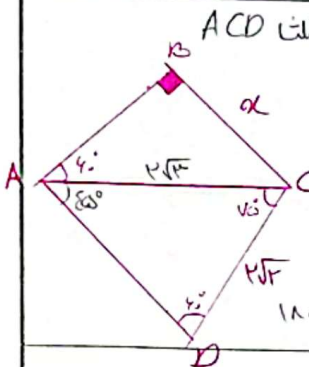
$$180 - 135 = 45^\circ \Rightarrow A$$

$$\frac{AB}{\sin C} = \frac{AC}{\sin B} \Rightarrow \frac{2}{\sin 45^\circ} = \frac{2\sqrt{2}}{\sin B}$$

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

$$A + B + C = 180^\circ$$

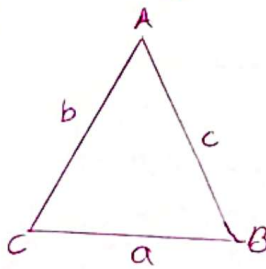
$$45 + 45 + C = 180^\circ \Rightarrow C = 90^\circ$$



$$\text{ACD (مثلث)}: \frac{2\sqrt{2}}{\sin 45^\circ} = \frac{AC}{\sin 90^\circ} \Rightarrow AC = 2\sqrt{2}$$

$$\text{ABC (مثلث)}: \frac{AC}{\sin 90^\circ} = \frac{BC}{\sin A} \Rightarrow \frac{2\sqrt{2}}{1} = \frac{2}{\sin 90^\circ} \Rightarrow \sin 90^\circ = 1$$

$$180 - 45 - 90 = 45^\circ$$



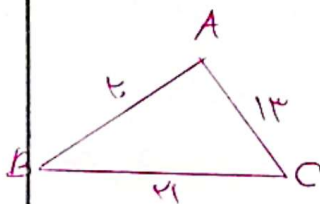
$$(b^2 - 2) \times \frac{\sin C}{\sin B} = c \Rightarrow (b^2 - 2) \frac{c}{b} = c \Rightarrow b^2 - 2 = b$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \Rightarrow \frac{\sin C}{\sin B} = \frac{c}{b}$$

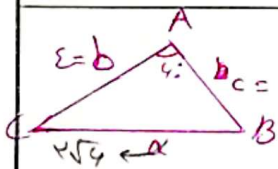
$$\text{جواب: } b = 2$$

$$\text{طبق قضیه کسینوس ها: } (14)^2 = (2)^2 + (2\sqrt{2})^2 - 2(2)(2\sqrt{2}) \cos B$$

$$196 = 4 + 8 - 8\sqrt{2} \cos B \Rightarrow 8\sqrt{2} \cos B = 4\sqrt{2} \Rightarrow \cos B = \frac{1}{2}$$



$$\sin B = \frac{1}{2}$$



$$\text{(الف) طبق قضیه کسینوس ها: } a^2 = (2)^2 + (2\sqrt{2})^2 - 2(2)(2\sqrt{2}) \cos 90^\circ$$

$$a^2 = 4 + 8 - 0 = 12 \Rightarrow a = 2\sqrt{3}$$

$$a^2 = 12 \Rightarrow a = 2\sqrt{3}$$

$$a = 2\sqrt{3}$$

$$\frac{2\sqrt{2}}{\sin A} = \frac{2\sqrt{3}}{\sin B} = \frac{c}{\sin C} \Rightarrow \sin B = \frac{\sqrt{2}}{2} \Rightarrow B = 45^\circ$$

$$A + B + C = 180^\circ \Rightarrow C = 90^\circ$$

	طبق قضیه کوسین ها: $DE = x$ ΔABC (داده شده): $1^2 = 1 + 2^2 - 2(1)(2)(\cos 60^\circ)$ $\frac{1}{2} = \cos 60^\circ$ ΔADE (داده شده): $(DE)^2 = 1^2 + 2^2 - 2(1)(2)(\cos 60^\circ)$ $DE = x \rightarrow \boxed{DE = \sqrt{10}}$ ✓	6
	طبق قضیه کوسین ها: $BC^2 = 2^2 + 4^2 - 2(2)(4)(\cos 60^\circ)$ $BC^2 = 4 + 16 - 8 = 12 \rightarrow BC = \sqrt{12} = 2\sqrt{3}$ ✓ $S_{\Delta ABC} = \frac{1}{2}(2)(4)(\sin 60^\circ) = \frac{1}{2}(8)(\frac{\sqrt{3}}{2}) = 2\sqrt{3}$ ✓	7
	طبق قضیه کوسین ها: $a^2 = b^2 + c^2 - 2bc \cos A$ $\frac{2bc \cos A}{b^2 + c^2 - a^2 + 2bc} = \frac{2bc(1 - \cos A)}{bc(1 + \cos A)} = 2$ جواب: $\boxed{2}$ ✓	8
	$a^2 + b^2 - c^2 = a^2 + a^2b - a^2c \rightarrow b^2 - c^2 = a^2(b - c)$ $(b - c)(b + c + bc) = a^2(b - c) \rightarrow b^2 + c^2 + bc = a^2$ $a^2 = b^2 + c^2 - 2bc \cos A$ $\boxed{\cos A = -\frac{1}{2}} \rightarrow A = 120^\circ$ ✓	9
	$\frac{1}{2}(1 - \cos \theta)(1 + 3 \cos \theta) \times \frac{1}{2} = 1 \rightarrow 1 + 4 \cos \theta - \cos^2 \theta - 3 \cos^3 \theta = 2$ $-3t^3 + 4t - 1 = 0 \rightarrow \cos \theta = t = 1$ $t = 1, \frac{1}{3} \times 1 \rightarrow \cos \theta = 1$ $a^2 = 1^2 + 2^2 - 2(1)(2)(\cos \theta)$ $a^2 = 1 + 4 - 4 = 1 \rightarrow a = 1$ ✓	10