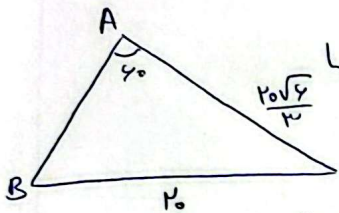


نام و نام خانوادگی پریم پاسخنامه تشریحی تکلیف شماره ۱۳ کلاس روزم

$$\hat{B} + \hat{C} = 120 \rightarrow \hat{A} = 180 - 120 = 60$$



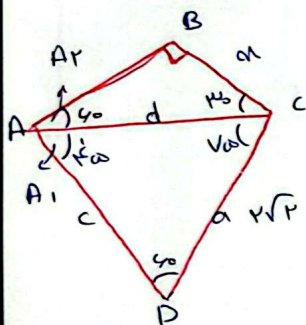
قانون سینوس

$$\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{10}{\frac{\sqrt{3}}{3}} = \frac{10\sqrt{3}}{\sin B} \rightarrow \hat{C} = 120 - 60 = 60$$

$$\sin \hat{B} = \frac{\sqrt{3}}{3} \times \frac{\sqrt{3}}{3} = \frac{3\sqrt{3}}{9} = \frac{\sqrt{3}}{3} \rightarrow \hat{B} = 60 \text{ or } 120$$

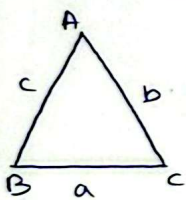
با ۱۲۰ با $\hat{B} + \hat{C}$ غلط است

قانون سینوس



① $\frac{a}{\sin A} = \frac{d}{\sin D} \rightarrow \frac{10\sqrt{3}}{\frac{\sqrt{3}}{3}} = \frac{d}{\frac{\sqrt{3}}{3}} \rightarrow d = 10\sqrt{3}$

② $\sin 60 = \frac{m}{AC} \rightarrow \frac{\sqrt{3}}{2} = \frac{m}{10\sqrt{3}} \rightarrow m = 5$



$$(b^2 - c^2) \frac{\sin \hat{C}}{\sin \hat{B}} = c \quad ① \quad (b^2 - c^2) \left(\frac{c}{b} \right) = c \rightarrow \frac{b^2 - c^2}{b} = 1$$

قانون سینوس

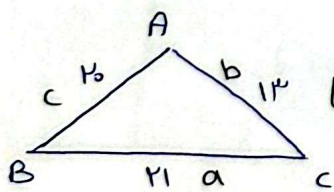
$$\frac{b}{\sin B} = \frac{c}{\sin C} \rightarrow \frac{\sin \hat{C}}{\sin \hat{B}} = \frac{c}{b} \quad ①$$

$$b^2 - b^2 = 0$$

$$(b - 2)(b + 1) = 0$$

$$b = 2 \text{ or } b = -1$$

ب = ۲



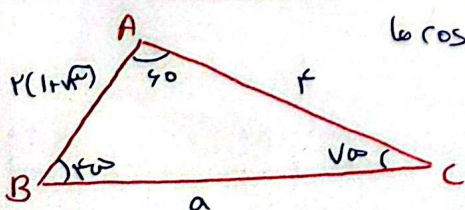
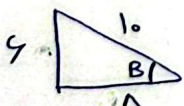
برای بدست آوردن Sin B ابتدا باید $\cos B$ یا زاویه B را بدست آوریم

قانون کوسین

$$b^2 = a^2 + c^2 - 2ac \cos \hat{B}$$

$$149 = 121 + 100 - 2 \times 11 \times 10 \times \cos \hat{B} \rightarrow 6\sqrt{3} = 11 \cos \hat{B}$$

$$\cos \hat{B} = 0.18 \rightarrow \sin^2 \hat{B} + \cos^2 \hat{B} = 1 \rightarrow \sin \hat{B} = 0.98$$



قانون کوسین

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

$$a^2 = 14 + 4(1 + \sqrt{3})^2 - 2 \times 2 \times 2(1 + \sqrt{3}) \times \frac{1}{2}$$

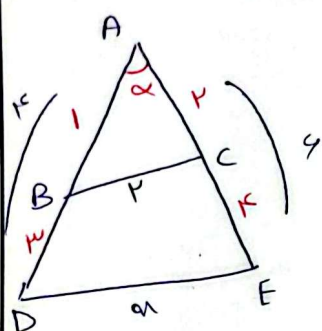
$$a^2 = 14 + 14 + 4\sqrt{3} - 1 - 4\sqrt{3}$$

$$(a^2) = 24 \rightarrow a = 2\sqrt{6}$$

ب) $\frac{a}{\sin A} = \frac{b}{\sin B} \rightarrow \frac{2\sqrt{6}}{\frac{\sqrt{3}}{2}} = \frac{2}{\sin B} \rightarrow \sin B = \frac{\sqrt{3}}{2} \rightarrow \hat{B} = 60 \text{ or } 120$

$$\cos 60 = \frac{1}{2}$$

$$180 - (60 + 60) = 60$$



ابتدا $\cos \alpha$ را در مثل ABC طبق قیاس $\cos$ محاسبه می‌کنیم

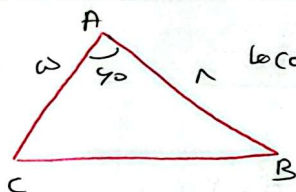
$$a^2 = b^2 + c^2 - 2bc \cos \hat{A}$$

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

$$\Delta ADE \rightarrow a^2 = x^2 + x^2 - 2 \times x \times x \times \frac{1}{2}$$

$$a^2 = 1^2 + 1^2 - 1^2 \Rightarrow a^2 = 1 \Rightarrow a = 1$$

$$\Delta DE^2 = AD^2 + AE^2 - 2AD \times AE \times \cos \alpha$$



$$\cos 60^\circ \text{ قیاس } BC^2 = AC^2 + AB^2 - 2AC \times AB \times \cos 60^\circ$$

$$1^2 = 1^2 + 1^2 - 2 \times 1 \times 1 \times \frac{1}{2} \Rightarrow 1^2 = 1 \Rightarrow 1 = 1$$

$$S_{ABC} = \frac{1}{2} b \times c \times \sin \hat{A}$$

$$S_{ABC} = \frac{1}{2} \times 1 \times 1 \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4}$$

ABC مثل متساوی الساقین

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

طبق قیاس $\cos$ می‌دانیم $a^2 = b^2 + c^2 - 2bc \cos A$

$$b^2 + c^2 + 2bc - (b^2 + c^2 - 2bc \cos A)$$

$$\frac{2bc + 2bc \cos A}{bc(\cos \hat{A} + 1)} = \frac{2bc(1 + \cos \hat{A})}{bc(1 + \cos \hat{A})} = 2$$

$$\frac{a^2 + b^2 - c^2}{a+b-c} = a^2$$

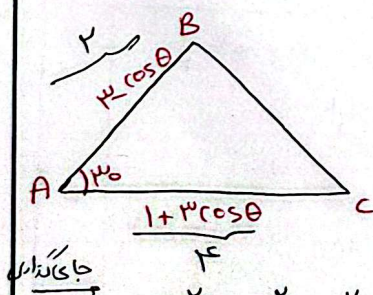
$$a^2 + b^2 - c^2 = a^2 + a^2(b-c)$$

$$\Rightarrow b^2 - c^2 = a^2(b-c) \rightarrow (b-c)(b^2 + c^2 + bc) = a^2(b-c)$$

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

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

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



$$S_{ABC} = \frac{AB \times AC \times \sin 120^\circ}{2} = \frac{(1 \times 1 \times \frac{\sqrt{3}}{2})}{2} = \frac{\sqrt{3}}{4}$$

$$1 + a \cos \theta - \cos \theta - 1 \cos^2 \theta = 1$$

$$\rightarrow 1 \cos^2 \theta - 1 \cos \theta + 1 = 0 \quad \cos \theta = 1$$

$$a^2 = b^2 + c^2 - 2bc \cos \hat{A} \Rightarrow a^2 = 1^2 + 1^2 - 2 \times 1 \times 1 \times \frac{\sqrt{3}}{2}$$

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