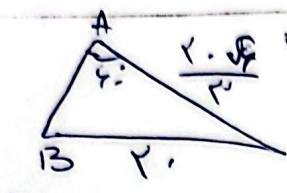


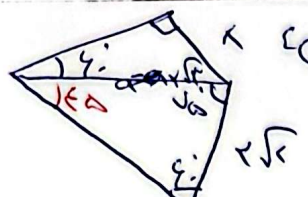
نام و نام خانوادگی: آریین پیرزادگیان پاسخنامه تشریحی تکلیف شماره ۱۳۰ ... کلاس ... دوازدهم ...



$$b^2 = c^2 + a^2 - 2ac \cos A \rightarrow 13 = 2^2 + 3^2 - 2 \cdot 2 \cdot 3 \cos 60^\circ$$

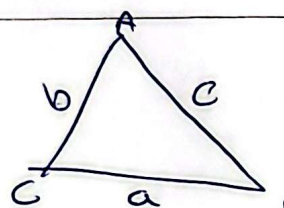
$$\frac{13}{2} = 4 + 9 - 6 \cos 60^\circ \Rightarrow \cos 60^\circ = \frac{1}{2} \Rightarrow \angle B = 45^\circ \rightarrow \angle C = 75^\circ$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{3}{\sin 60^\circ} = \frac{2}{\sin 45^\circ} \Rightarrow \sin 60^\circ = \frac{\sqrt{3}}{2} \Rightarrow \frac{3}{\frac{\sqrt{3}}{2}} = \frac{2}{\sin 45^\circ} \Rightarrow \sin 45^\circ = \frac{2 \cdot \sqrt{3}}{6} = \frac{\sqrt{3}}{3}$$



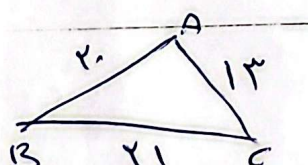
$$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{3}{\sin 60^\circ} = \frac{2}{\sin B} \Rightarrow \sin B = \frac{2 \sin 60^\circ}{3} = \frac{2 \cdot \frac{\sqrt{3}}{2}}{3} = \frac{\sqrt{3}}{3}$$

$$\sin B = \frac{\sqrt{3}}{3} \Rightarrow B = 45^\circ \rightarrow C = 75^\circ$$



$$\frac{b^2 - c^2}{\sin B} = \frac{c}{\sin B} = \frac{b}{\sin B} \rightarrow b^2 - b - c^2 = 0$$

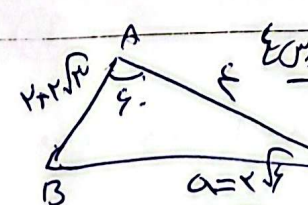
$$\Rightarrow (b-c)(b+c) = 0 \rightarrow b = c$$



$$(13)^2 = (2)^2 + (3)^2 - 2(2)(3) \cos 13^\circ$$

$$169 = 4 + 9 - 12 \cos 13^\circ \rightarrow \cos 13^\circ = \frac{1}{2}$$

$$\rightarrow \sin 13^\circ = \frac{\sqrt{3}}{2}$$



$$a^2 = 16 + 16 + 8\sqrt{3} - 2(4)(2+2\sqrt{3}) \cos 60^\circ$$

$$a^2 = 32 + 8\sqrt{3} - 8(2+2\sqrt{3}) \cos 60^\circ$$

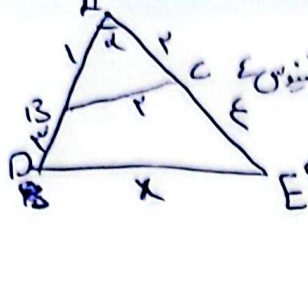
$$a^2 = 32 + 8\sqrt{3} - 8(2+2\sqrt{3}) \cdot \frac{1}{2}$$

$$a^2 = 32 + 8\sqrt{3} - 8(1+\sqrt{3}) = 32 + 8\sqrt{3} - 8 - 8\sqrt{3} = 24$$

$$a = 2\sqrt{6}$$

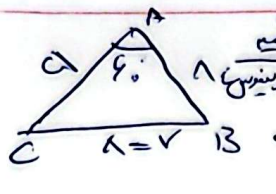
$$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{2\sqrt{6}}{\sin 60^\circ} = \frac{2}{\sin B} \Rightarrow \sin B = \frac{2 \sin 60^\circ}{2\sqrt{6}} = \frac{\sqrt{3}}{\sqrt{6}} = \frac{1}{\sqrt{2}} \Rightarrow B = 45^\circ$$

$$\rightarrow \angle B = 45^\circ \rightarrow \angle C = 75^\circ$$



$$(x)^2 = (1)^2 + (2)^2 - 2(1)(2)\cos\alpha \rightarrow \cos\alpha = \frac{1}{2}$$

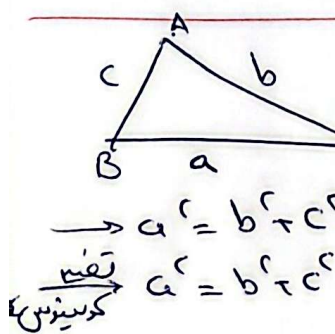
$$x^2 = 1 + 4 - 2(2)(1)\cos\alpha \rightarrow x^2 = 5 - 2 \rightarrow x = \sqrt{3}$$



$$x^2 = 2^2 + 1^2 - 2(2)(1)\cos 60^\circ \rightarrow x^2 = 4 + 1 - 2 = 3 \rightarrow x = \sqrt{3}$$

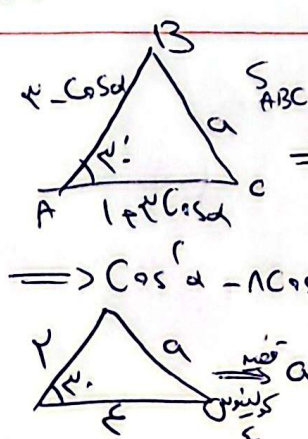
$$S_{ABC} = \frac{1}{2}(2)(1)\sin 60^\circ = \frac{1}{2} \cdot 1 \cdot \sqrt{3} = \frac{\sqrt{3}}{2}$$

$$\frac{(b+c)^2 - a^2}{bc(\cos A + 1)} = \frac{(a+b)^2 - (c)^2}{(a)(b)(\cos A + 1)} = \frac{16a - 49}{9} = \frac{16}{9} = 12$$



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

$$\rightarrow a^2 = b^2 + c^2 - 2bc \cos A$$



$$S_{ABC} = \frac{1}{2}(1)(2)\sin\alpha = \frac{1}{2} \cdot 1 \cdot 2 \cdot \sin\alpha = \sin\alpha$$

$$\Rightarrow x^2 + 9\cos\alpha - 10\cos\alpha - 10\cos\alpha = 10 \rightarrow 10\cos\alpha - 10\cos\alpha + 10 = 10$$

$$\Rightarrow \cos\alpha = 1 \rightarrow \alpha = 0^\circ$$

$$x^2 = 1 + 4 - 2(2)(1)\cos\alpha \Rightarrow x^2 = 5 - 2 \rightarrow x = \sqrt{3}$$