

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس دبیر
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$$\hat{A} = 180^\circ - \hat{B} + \hat{C} \Rightarrow \hat{A} = 70^\circ \Rightarrow \frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}} \Rightarrow \frac{20}{\sin 70^\circ} = \frac{20\sqrt{3}}{\sin \hat{B}}$$

$$\Rightarrow \frac{20}{\frac{20\sqrt{3}}{3}} = \frac{20\sqrt{3}}{3 \sin \hat{B}} \Rightarrow 4 \sin \hat{B} \cdot \sqrt{3} = 5 \sin \hat{B} \cdot \frac{\sqrt{3}}{3}$$

$$\Rightarrow \hat{B} = 30^\circ \Rightarrow \hat{C} = 180^\circ - 70^\circ - 30^\circ = 80^\circ$$

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$$\frac{n}{\sin 70^\circ} = \frac{AC}{\sin 90^\circ} \Rightarrow AC = \frac{20}{\sin 70^\circ} \cdot \sin 90^\circ = \frac{20}{\sin 70^\circ}$$

$$\hat{A}_r = 90^\circ \Rightarrow \frac{20\sqrt{3}}{\sin 90^\circ} = \frac{\frac{20}{\sin 70^\circ} \cdot n}{\sin 70^\circ} \Rightarrow \frac{20\sqrt{3}}{1} = \frac{20n}{\sin^2 70^\circ}$$

$$\Rightarrow \Sigma = \frac{20}{\sqrt{3}} n \Rightarrow n = \frac{\sqrt{3}}{20} \Sigma$$

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$$\frac{\sin \hat{C}}{c} = \frac{\sin \hat{B}}{b} \Rightarrow \frac{\sin \hat{C}}{c} = \frac{\sin \hat{B}}{b^2 - r} = \frac{\sin \hat{B}}{b}$$

$$\Rightarrow b^2 - r = b \Rightarrow b^2 - b - r = 0 \Rightarrow b = 2$$

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$$b^2 = a^2 + c^2 - 2ac \cos \hat{B} \Rightarrow 179 = 21^2 + 2^2 - 2(21)(2) \cos \hat{B}$$

$$774 = 441 + 4 - 84 \cos \hat{B} \Rightarrow 84 \cos \hat{B} = 445 - 774 = -329 \Rightarrow \cos \hat{B} = -\frac{329}{84}$$

$$\sin^2 \hat{B} + \cos^2 \hat{B} = 1 \Rightarrow \sin^2 \hat{B} = 1 - \left(\frac{329}{84}\right)^2 = 0.17 \Rightarrow \sin \hat{B} = \frac{\sqrt{17}}{10}$$

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$$a^2 = b^2 + c^2 - 2bc \cos \hat{A} \Rightarrow a^2 = 17 + 1 + 2\sqrt{3} - 2(17)(1+\sqrt{3}) \cos 70^\circ$$

$$\Rightarrow 22 + 2\sqrt{3} - (17 + 17\sqrt{3}) \cos 70^\circ = a^2 \Rightarrow \cos 70^\circ = \frac{22 + 2\sqrt{3} - a^2}{17(1 + \sqrt{3})}$$

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

$$a^2 = 4 + 12 + 12\sqrt{3} + 4 - 1 - 12\sqrt{3} \Rightarrow a^2 = 22 \Rightarrow a = \sqrt{22}$$

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$$\frac{2\sqrt{4}}{\sin 40^\circ} = \frac{4}{\sin \hat{B}} \Rightarrow \sin \hat{B} = \frac{\sqrt{4}}{2} \Rightarrow \hat{B} = 30^\circ, \hat{C} = 70^\circ$$

$$ABC \text{ دایره } \rightarrow r^2 + 1^2 - 2(r)(1)(\cos A) = r^2 \rightarrow \cos A = 1 \rightarrow \hat{A} = \frac{1}{r}$$

$$ADE \text{ دایره } \rightarrow 4^2 + r^2 - 2(4)(r)(\frac{1}{2}) = 4^2 + 1^2 - 1^2 = 4$$

$$DE^2 = 4 \rightarrow DE = \underline{2\sqrt{1}}$$

$$a^2 = 7^2 + 2^2 - 2(7)(2)(\cos 70^\circ) \Rightarrow a^2 = 29 \Rightarrow a = \sqrt{29}$$

$$\frac{1}{2}ab \sin C \Rightarrow \frac{1}{2} \times 8 \times 1 \times \frac{\sqrt{10}}{2} = 1 \times \sqrt{10} \times \sin D$$

$$\frac{b^2 + c^2 + 2bc \cos A - b^2 - c^2 + 2b \cos A}{bc(\cos A + 1)} \rightarrow \text{باز هم به هم تقسیم میکنیم}$$

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

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

$$\cancel{b^2} - \cancel{c^2} = a^2(\cancel{b} - \cancel{c})$$

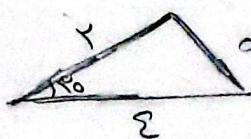
$$b^2 + c^2 + bc = a^2 \rightarrow \cancel{b^2} + \cancel{c^2} - bc = \cancel{b^2} + \cancel{c^2} - 2bc \cos A$$

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

$$\frac{1}{r} (r - \cos \theta) (1 + r \cos \theta) \sin 40^\circ = (-r \cos \theta + r + 1 \cos \theta) \times \frac{1}{r} \times r$$

$$-r \cos \theta + 1 \cos \theta + r = 1 \Rightarrow -r \cos \theta + 1 \cos \theta - 0.5 = 0 \Rightarrow (\cos \theta - 1)(-r \cos \theta + 1)$$

$$\Rightarrow \cos \theta = 1$$



$$\Rightarrow a^2 = 20 - 1 \times \sqrt{10}$$