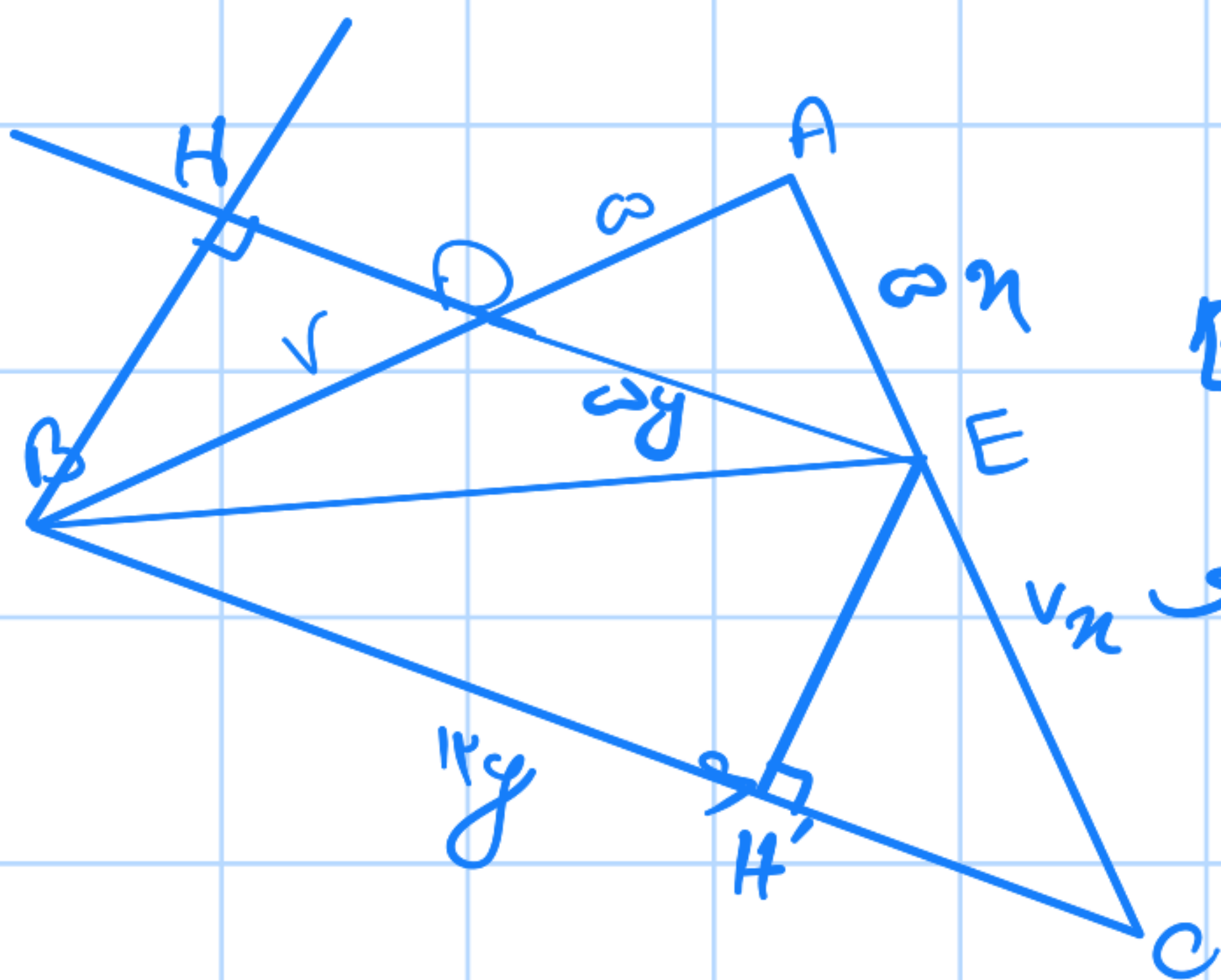


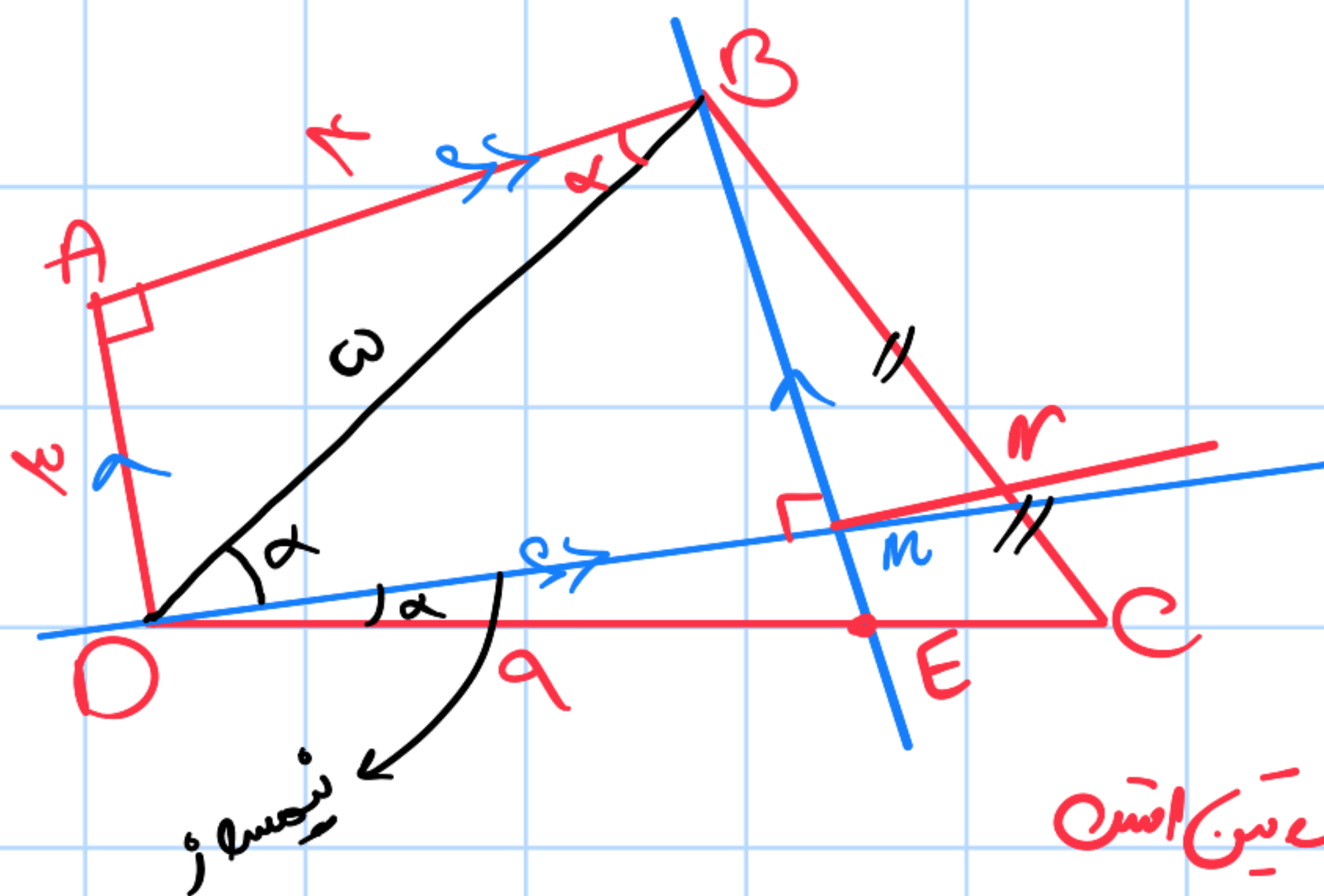
← مسئله ۱



$$EH' = BH$$

$$\frac{S_{BDE}}{S_{BEC}} = \frac{\frac{EH' \times 12}{2}}{\frac{BH \times 12}{2}} = \frac{12}{3}$$

$$\frac{AE}{AC} = \frac{AD}{BA} = \frac{ED}{BE}$$



← مسئله ۲

← مسئله ۳

← مسئله ۴

$$BD' = AB' + AD' = 12 + 12 = 24 \Rightarrow BD = 24$$

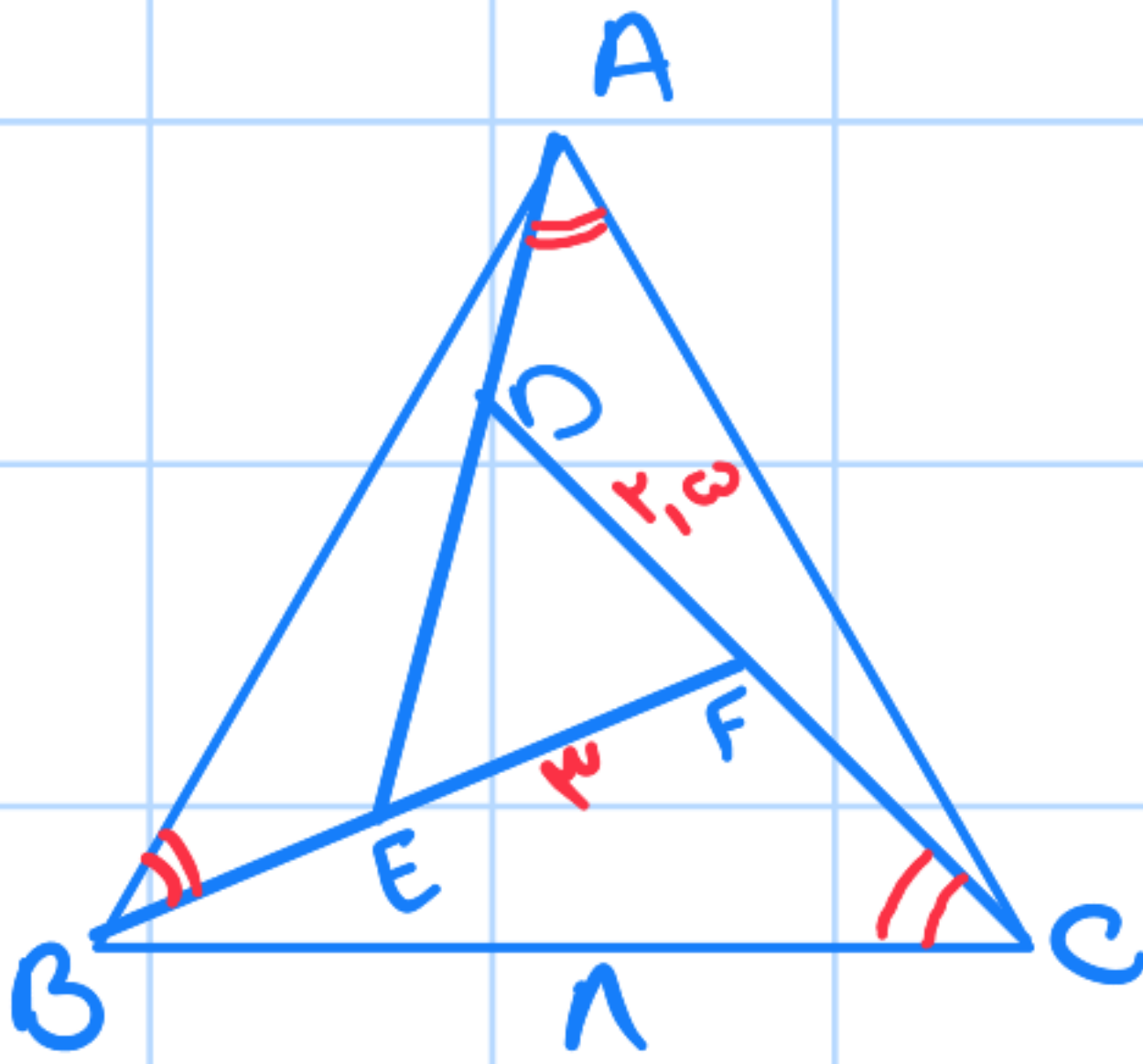
$$BD = DE = 24 \quad EE = DE - DE = 24 - 24 = 0$$

← مسئله ۵

$$\frac{BM}{ME} = \frac{BN}{NC}$$

$$\rightarrow MN \parallel EC \Rightarrow \frac{MN}{EC} = \frac{1}{2}$$

$$\rightarrow MN = 1$$



$$\triangle DEF \sim \triangle ABC \Rightarrow \frac{DF}{BC} = \frac{1}{2} \Rightarrow n = 1,9$$

$$BM = AM = 3$$



$$BM \parallel DC \Rightarrow BME \sim DEC \rightarrow \frac{ME}{CE} = \frac{BM}{DE} = \frac{3}{4-3} = 3$$

$$\Rightarrow BM = CM = BE + EM = 4 + 3 = 7$$

$$\rightarrow CM = 7 \rightarrow ME = 3, CE = 4$$

$$AMF \sim BCM \Rightarrow \frac{AM}{BC} = \frac{MF}{MC} \Rightarrow \frac{3}{4} = \frac{MF}{7} \Rightarrow$$

$$MF = \frac{21}{4}$$

$$S_{MFE} = \frac{1}{2} \times ME \times MF = \frac{1}{2} \times (3 \times \frac{21}{4})$$

$$= \frac{63}{8}$$

$$= 7.875$$



$$ABE \rightarrow AE^2 = AB^2 + BE^2 \rightarrow$$

$$11^2 + n^2 \rightarrow AE = \sqrt{11^2 + n^2}$$

$$AE^2 = 11^2 + n^2 \Rightarrow AE = \sqrt{11^2 + n^2}$$

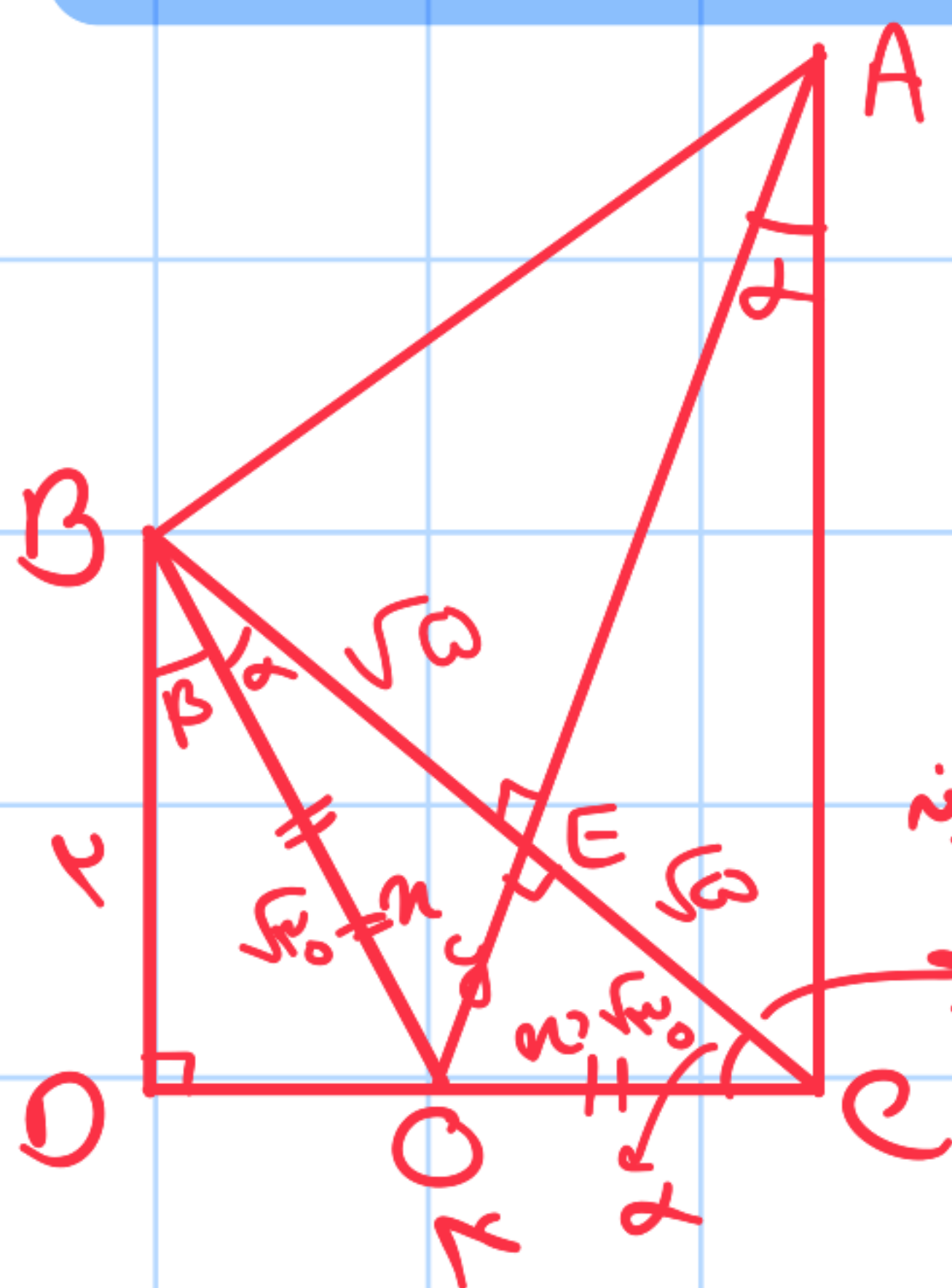
$$AEE \sim ACD \Rightarrow \frac{AE}{ED} = \frac{EC}{AE} \Rightarrow AE^2 = ED \times EC$$

$$\rightarrow 11^2 + n^2 = 10(10+n) \rightarrow$$

$$b^2 + b^2 = 14^2 \Rightarrow 2b^2 = 196 \Rightarrow b^2 = 98 \Rightarrow b = 7\sqrt{2}$$

مساحت را در دو برابر می‌کنیم
پس با آن مساحت تا به اندازه مساحت
 $b = 7\sqrt{2}$

$$\sqrt{(7\sqrt{2})^2 + (7\sqrt{2})^2} = 14 + 32 = 46 \Rightarrow 7\sqrt{10}$$



در مثل قائم‌الزاویه ABCD از رأس B خطی را می‌کشیم که موازی با AC باشد و آن را تا رسیدن به خط عمود بر AC در نقطه E قطع می‌کنیم.

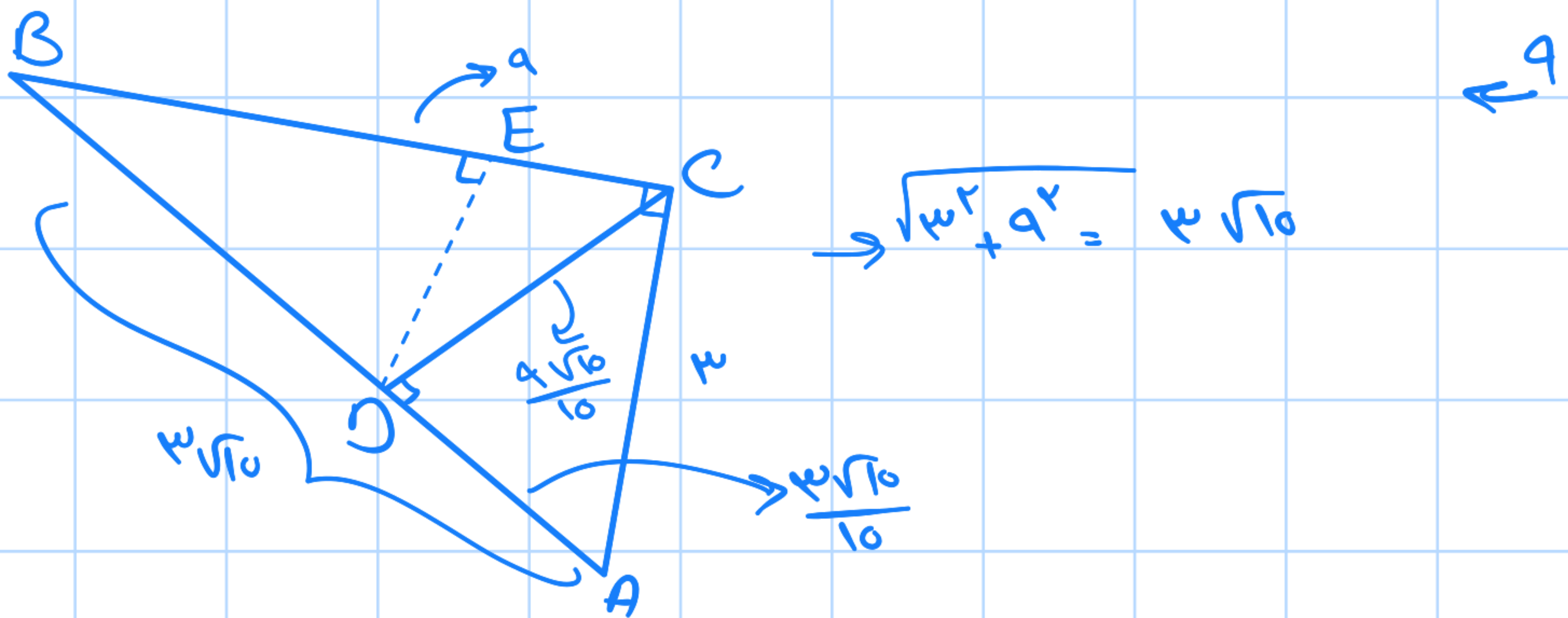
در اینجا، عمود منتهی

$$BC = \sqrt{a^2 + b^2} + 2\sqrt{d} = 2BE + 2EC$$

$$BE + EC = \sqrt{d}$$

$$\frac{a}{\sqrt{d}} = \frac{b}{AE} = \frac{2\sqrt{d}}{d} \Rightarrow AE = 2\sqrt{d}$$

$$S_{ABE} = \frac{AE \times BE}{2} = \frac{2\sqrt{d} \times \sqrt{d}}{2} = d$$



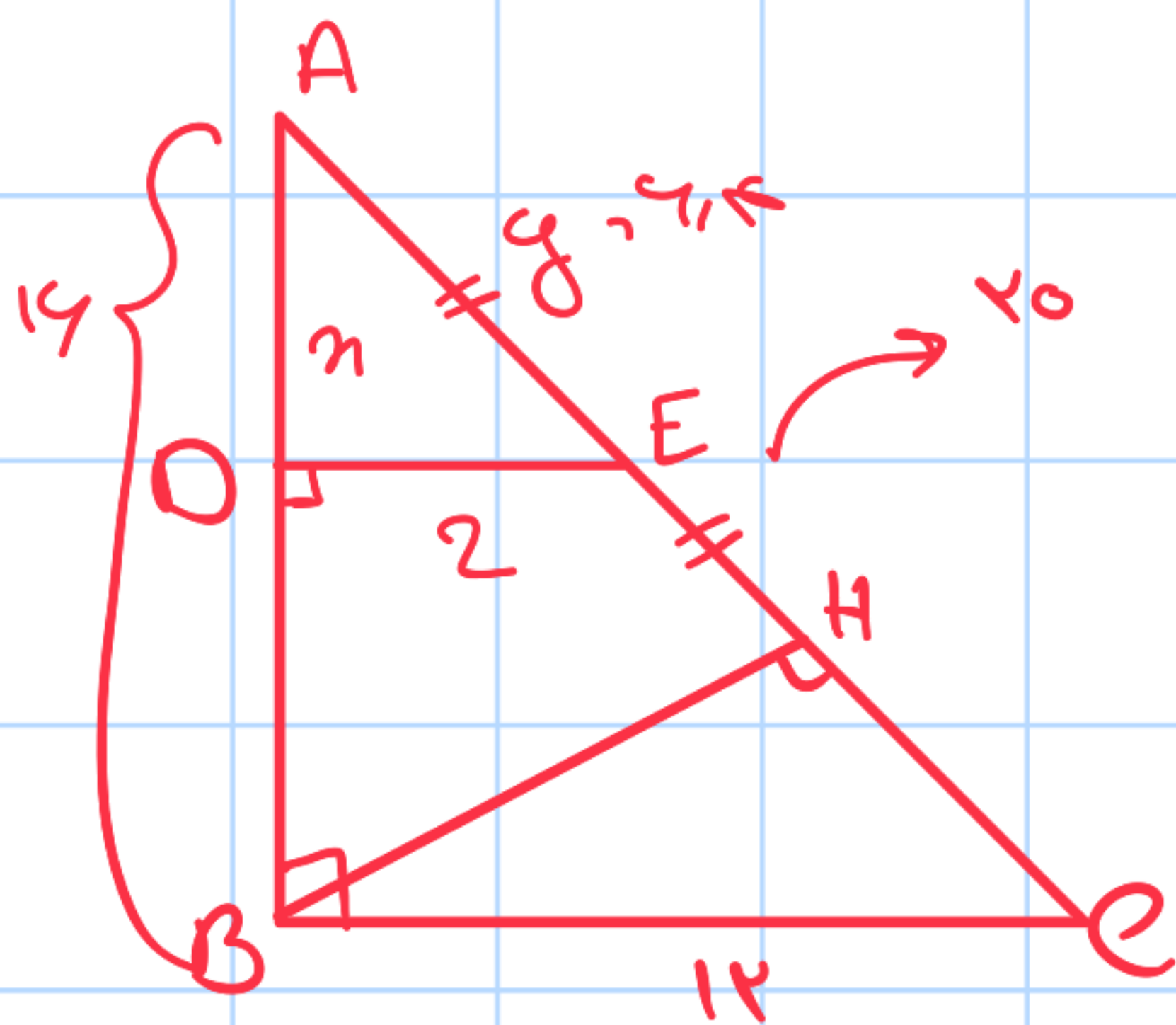
$$\triangle DAC \sim \triangle ABC \rightarrow \frac{AC}{AB} = \frac{DA}{AC} = \frac{DC}{BC} \rightarrow \frac{w}{w\sqrt{10}} = \frac{DA}{w} = \frac{DC}{a}$$

$$DA = \frac{w\sqrt{10}}{10}$$

$$\triangle DEB \sim \triangle ABC \rightarrow \frac{ED}{AC} = \frac{EB}{BC} = \frac{BD}{BA} \rightarrow \frac{ED}{w} = \frac{EB}{a} = \frac{w\sqrt{10} - DA}{w\sqrt{10}}$$

$$\rightarrow EB \times w\sqrt{10} = a \left(w\sqrt{10} - \frac{w\sqrt{10}}{10} \right) \rightarrow$$

$$EB \times w\sqrt{10} = a \times \frac{9w\sqrt{10}}{10} \rightarrow EB = 1,1$$



$$\triangle ABC \sim \triangle ADE \rightarrow \frac{AD}{AB} = \frac{AE}{AC} = \frac{DE}{BC} \rightarrow \frac{x}{14-x} = \frac{y}{10} = \frac{2}{14}$$

$$\triangle ABC \sim \triangle BHC \rightarrow \frac{BH}{AB} = \frac{HC}{BC} = \frac{BC}{AC} \rightarrow \frac{BH}{14} = \frac{10-y}{14} = \frac{14}{10}$$

$$\rightarrow \frac{10}{10} (10-y) = 14 \times 14 \rightarrow 100 - 10y = 196 \rightarrow$$

$$y = 4,14$$

$$\rightarrow \frac{4,14}{10} = \frac{2}{14} \rightarrow Z_2$$

10,14

