نام و نام خانوادگی ...عرفان عبالی... پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس ...دوازدهم ریاضی A...

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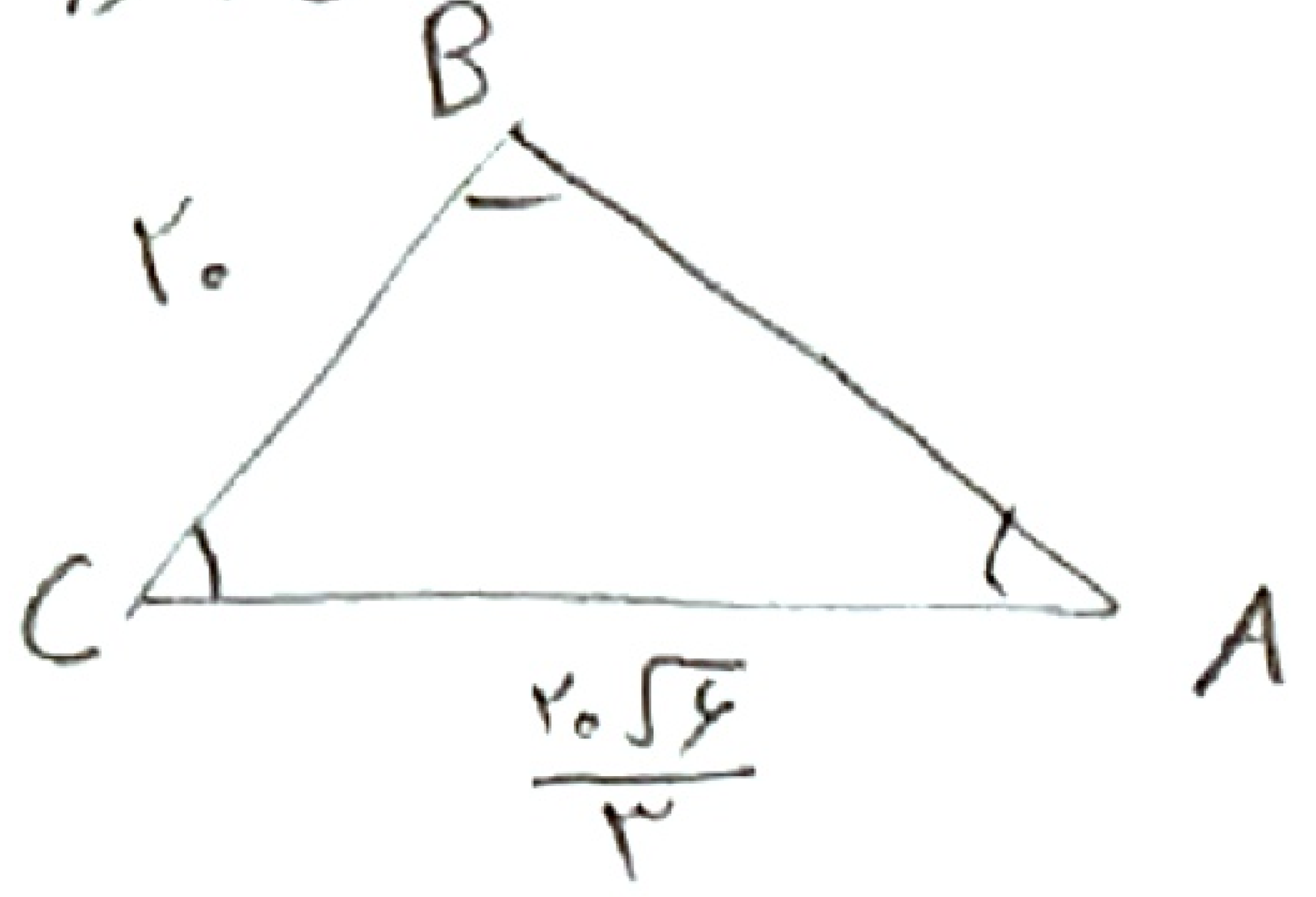
$\hat{B}+\hat{C}=120$, $\hat{A}=60$



قضیه سینوس ها $\longrightarrow \frac{20}{\sin\hat{A}}=\frac{\frac{20\sqrt{6}}{3}}{\sin\hat{B}} \longrightarrow \frac{\sqrt{6}}{3}\times\frac{\sqrt{3}}{2}=\sin\hat{B}$

$\sin\hat{A}\downarrow\frac{\sqrt{3}}{2}$

$\sin\hat{B}=\frac{\sqrt{2}}{2}\longrightarrow \hat{B}=45^\circ$, $\hat{C}=75^\circ$

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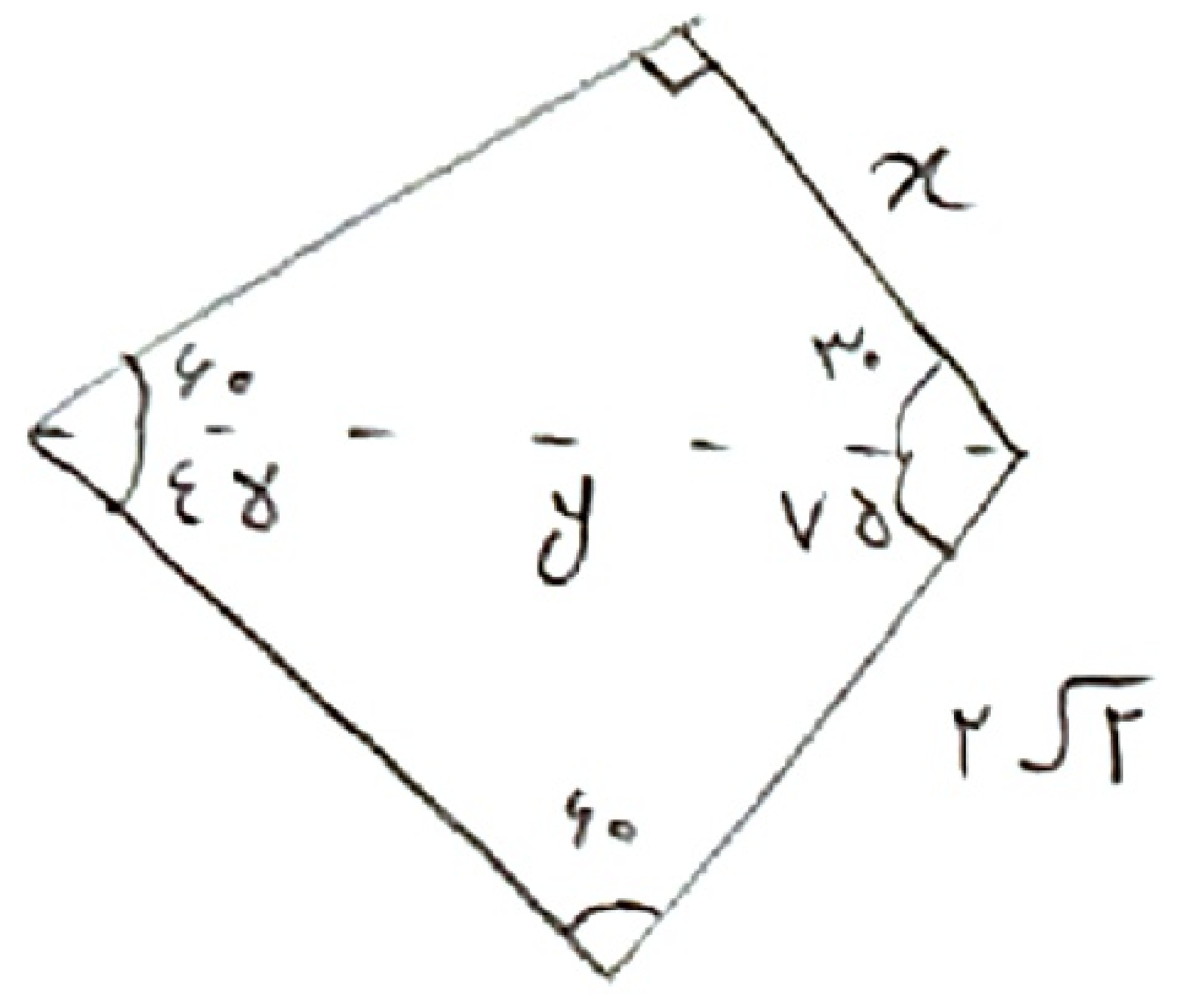

قضیه سینوس ها $\longrightarrow \frac{y}{\sin 60}=\frac{2\sqrt{2}}{\sin 45}\to y=2\sqrt{3}$

$\sin 60\downarrow\frac{\sqrt{3}}{2}$, $\sin 45\downarrow\frac{\sqrt{2}}{2}$

$\frac{y=2\sqrt{3}}{\sin 90}=\frac{x}{\sin 60}\longrightarrow x=3$

$\sin 90\downarrow 1$, $\sin 60\downarrow\frac{\sqrt{3}}{2}$

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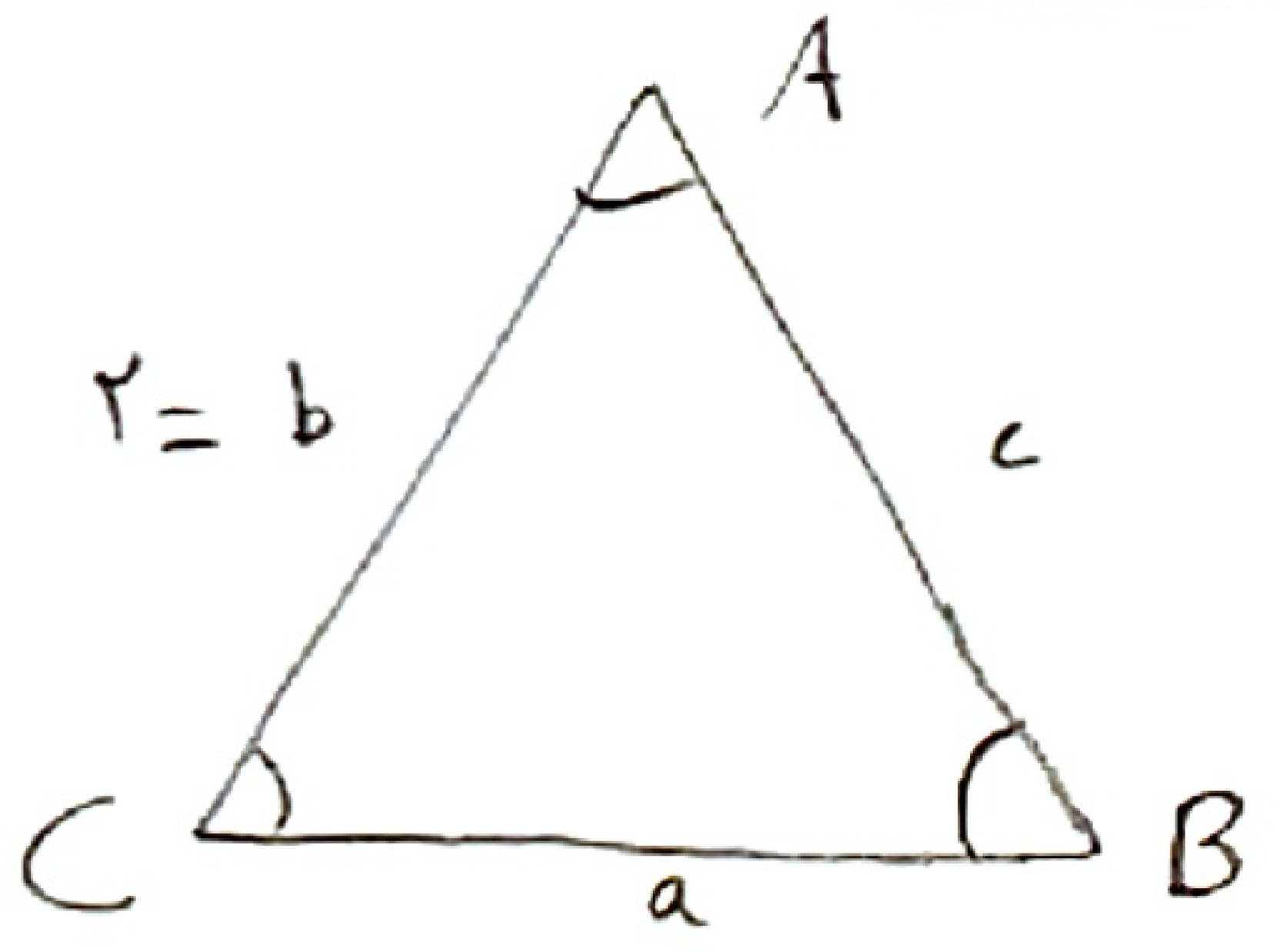

$(b^2-2)\frac{\sin\hat{C}}{\sin\hat{B}}=c\longrightarrow\frac{b^2-2}{\sin\hat{B}}=\frac{c}{\sin\hat{C}}$

$b^2-2=b$ — $b^2-b-2=0$

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$b=2$

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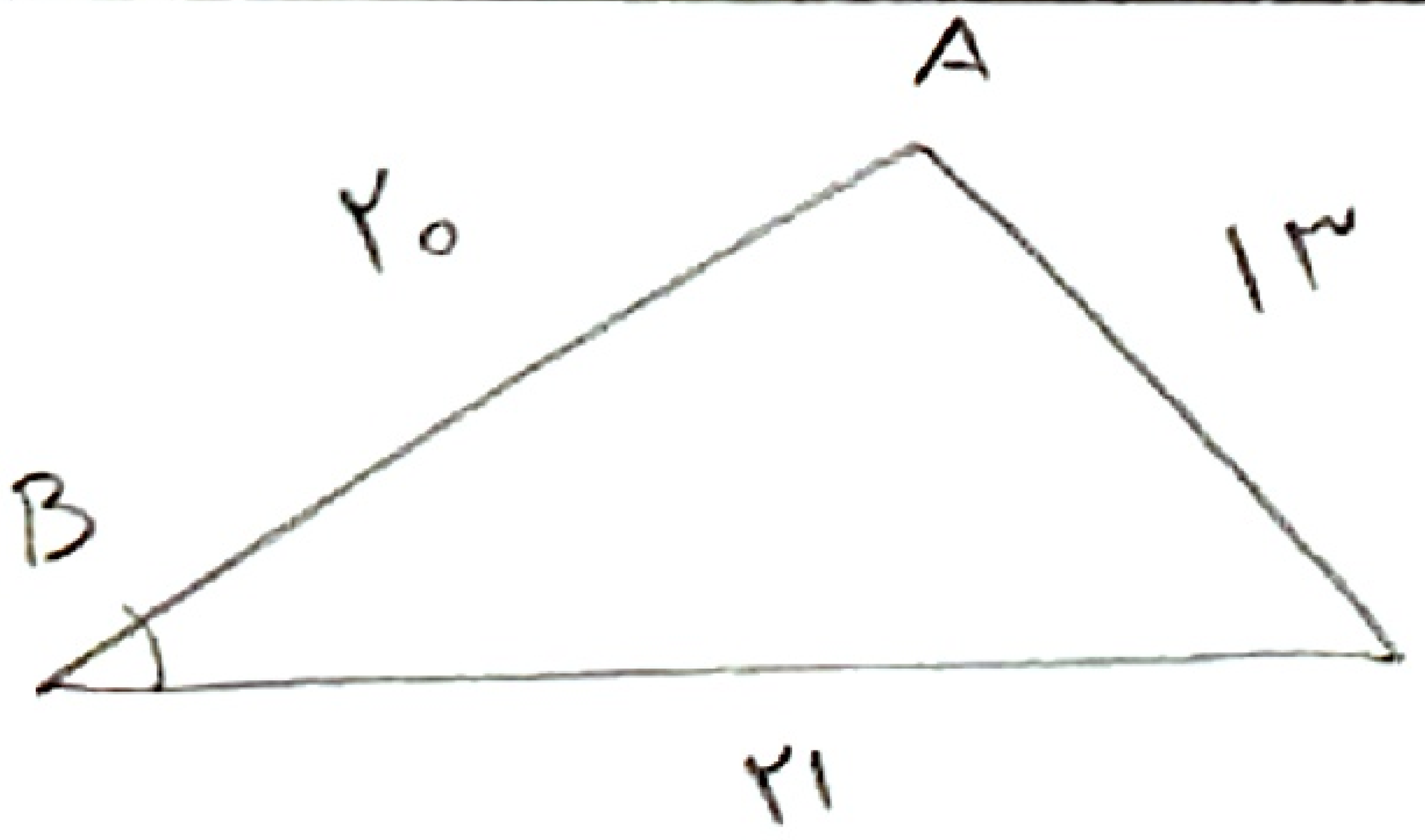

$13^2=21^2+20^2-2\times20\times21\times\cos\hat{B}$

$169=441+400-840\cos\hat{B}$

$0/8=\cos\hat{B}\longrightarrow\sin\hat{B}=0/6$

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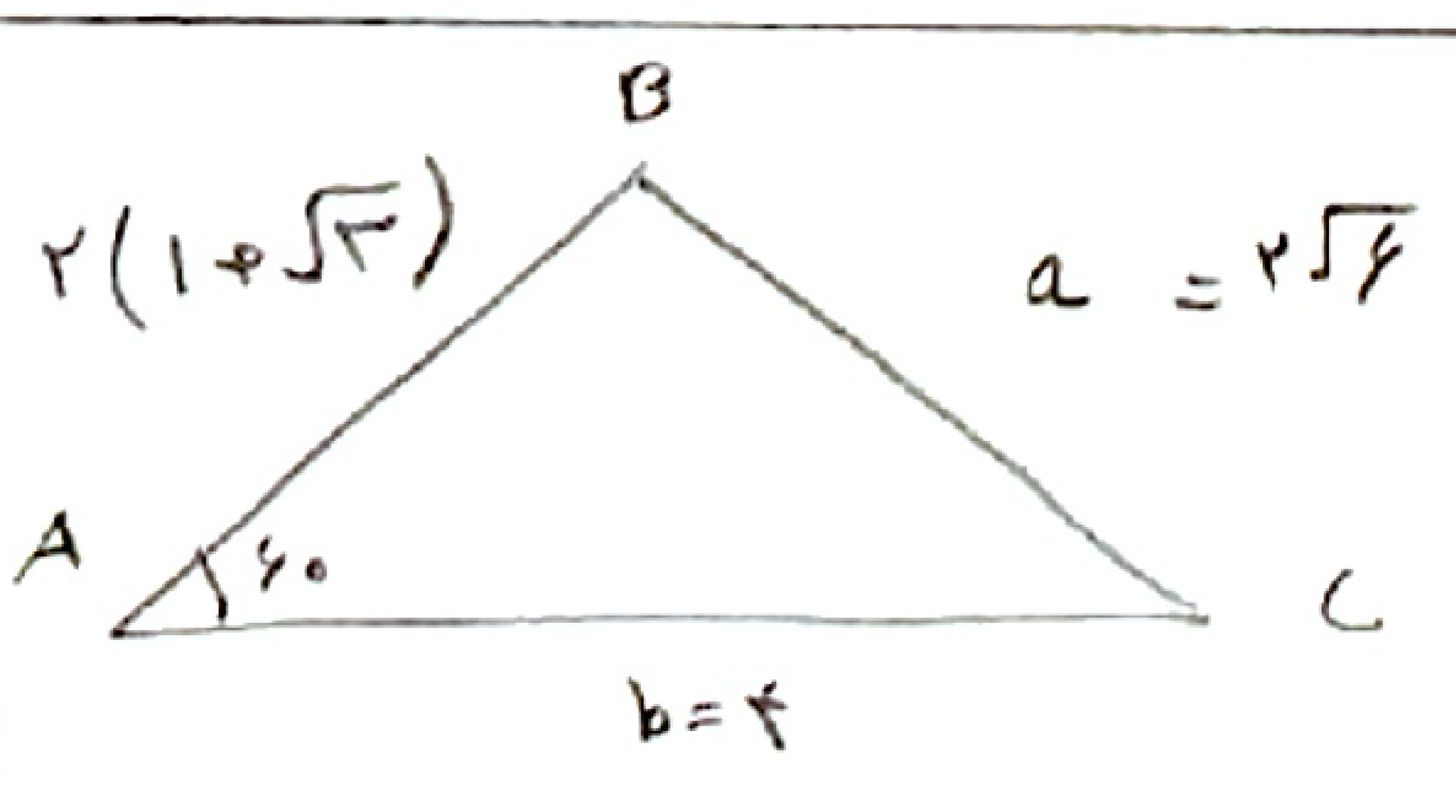


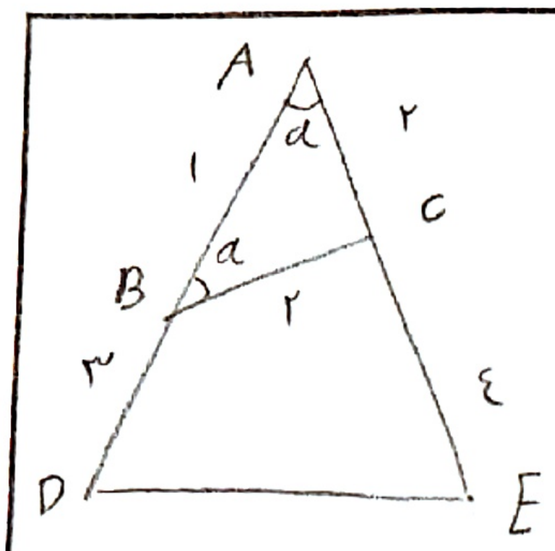
الف) $a=\sqrt{16+4(4+2\sqrt{3})-8(1+\sqrt{3})}=\sqrt{32-8+8\sqrt{3}-8\sqrt{3}}$

$a=\sqrt{24}=2\sqrt{6}$

ب) قضیه سینوس ها $\longrightarrow\frac{2\sqrt{6}}{\sin 60}=\frac{4}{\sin B}\longrightarrow\sin B=\frac{\sqrt{2}}{2}$, $\hat{B}=45^\circ$

$\hat{C}=75^\circ$

$\sin 60\downarrow\frac{\sqrt{3}}{2}$



$$AC = \sqrt{1+4-4\cos\alpha} = 2$$

$$4 = 8 - 4\cos\alpha \longrightarrow \cos\alpha = \frac{1}{2}$$

$$DE = \sqrt{36+16-48\left(\frac{1}{2}\right)} = \sqrt{40} = 2\sqrt{10}$$

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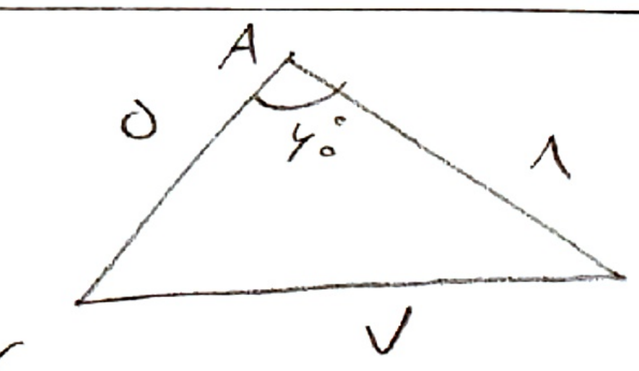

$$CB = \sqrt{25+64-80\left(\frac{1}{2}\right)} = 7$$

$$BC = 7$$

الف)

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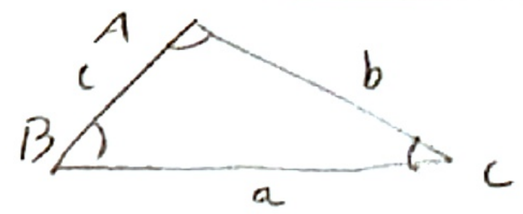
$$S = \frac{1}{2} \times AC \times AB \times \sin\hat{A} = \frac{1}{2} \times 5 \times 8 \times \frac{\sqrt{3}}{2} = 10\sqrt{3}$$

ب)

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

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



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

$$a^2 = c^2 + b^2 - 2bc\cos\hat{A} \qquad a^3 + b^3 - c^3 = a^2(a+b-c)$$

$$a^3 + b^2 - c^3 = a^3 + a^2b - a^2c \longrightarrow b^3 - c^3 = a^2(b-c)$$

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

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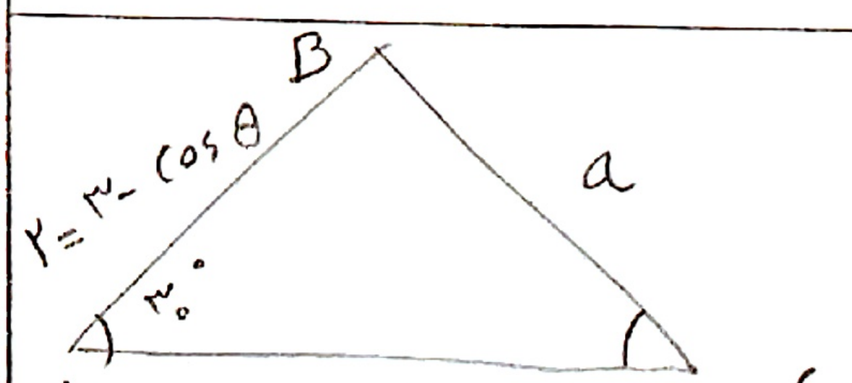
$$b^2 + c^2 + bc = a^2 \longrightarrow -2\cos\hat{A} = +1 \longrightarrow \cos\hat{A} = -\frac{1}{2}$$



$$S = \frac{1}{2}\sin 30\left(3-\cos\right)\left(1+3\cos\right) = 2$$

$$(3-\cos)(1+3\cos) = 8 \longrightarrow \cos = 1$$

$$a^2 = 4 + 16 - 16\cos 30^\circ \frac{\sqrt{3}}{2}$$

$$a^2 = 20 - 8\sqrt{3}$$

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