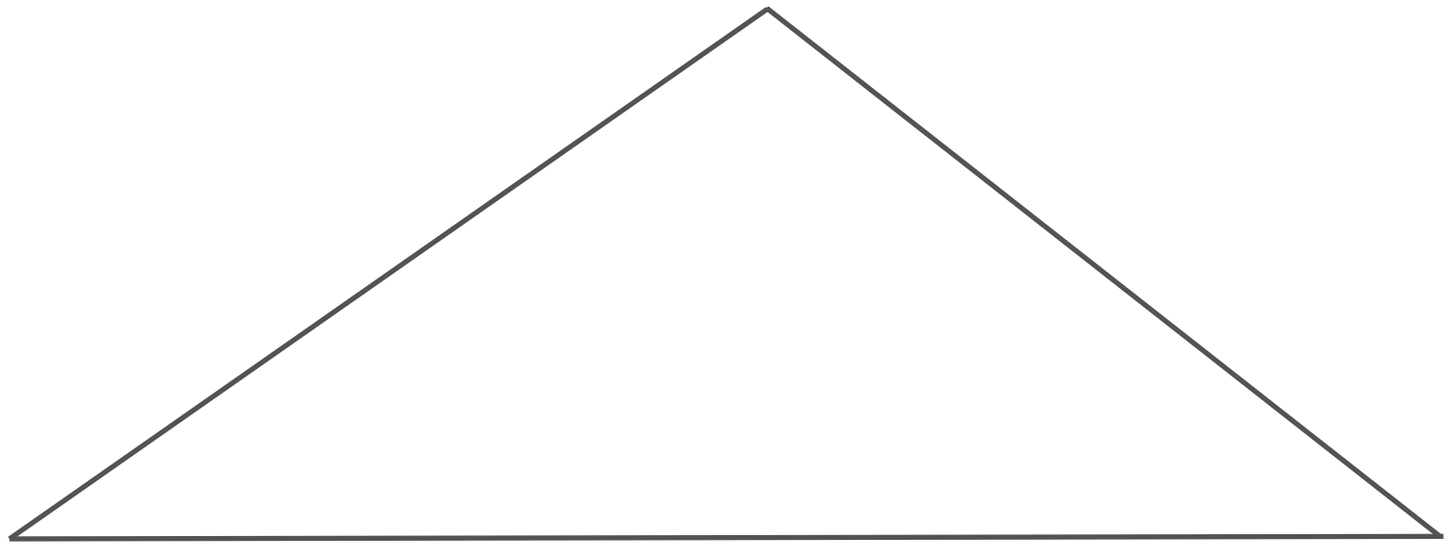
1.9 LOI DES SIN ET LOI DES COS

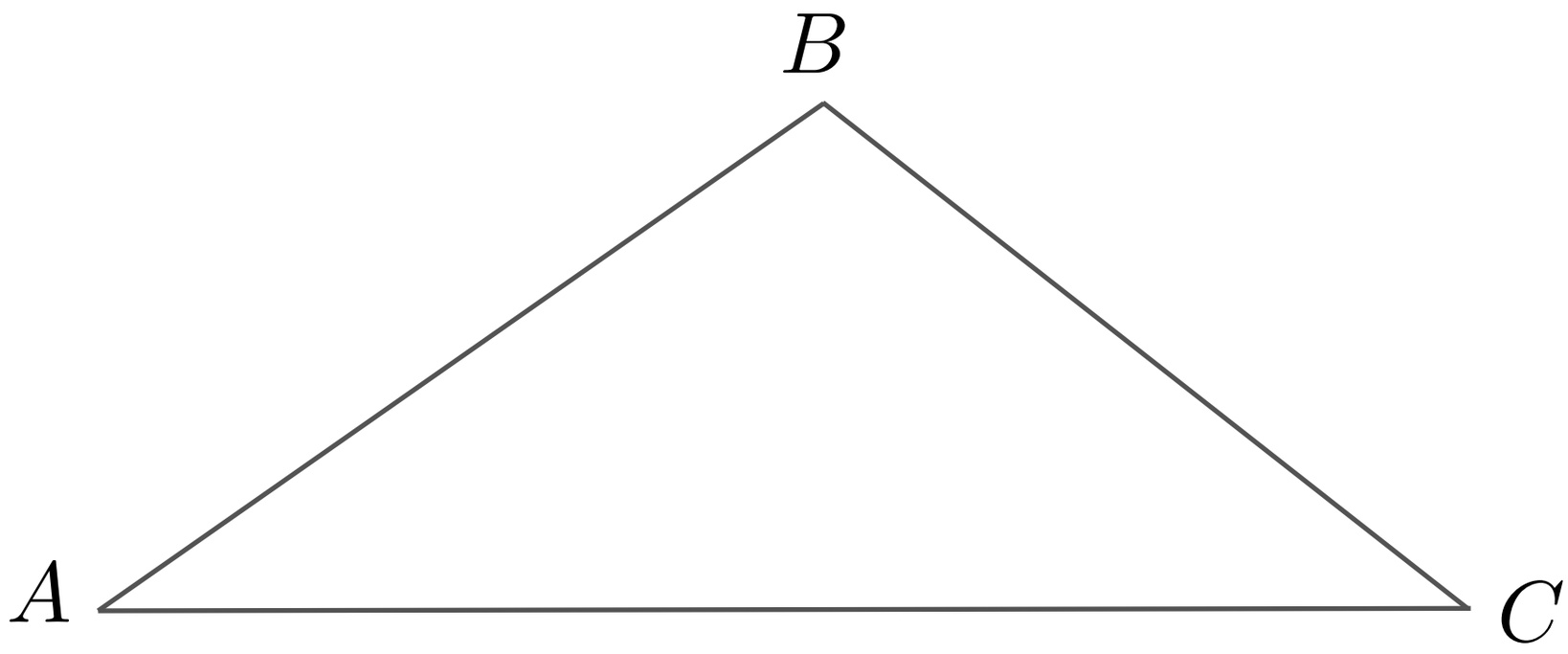
cours 9

Loi des cosinus

Loi des cosinus



Loi des cosinus



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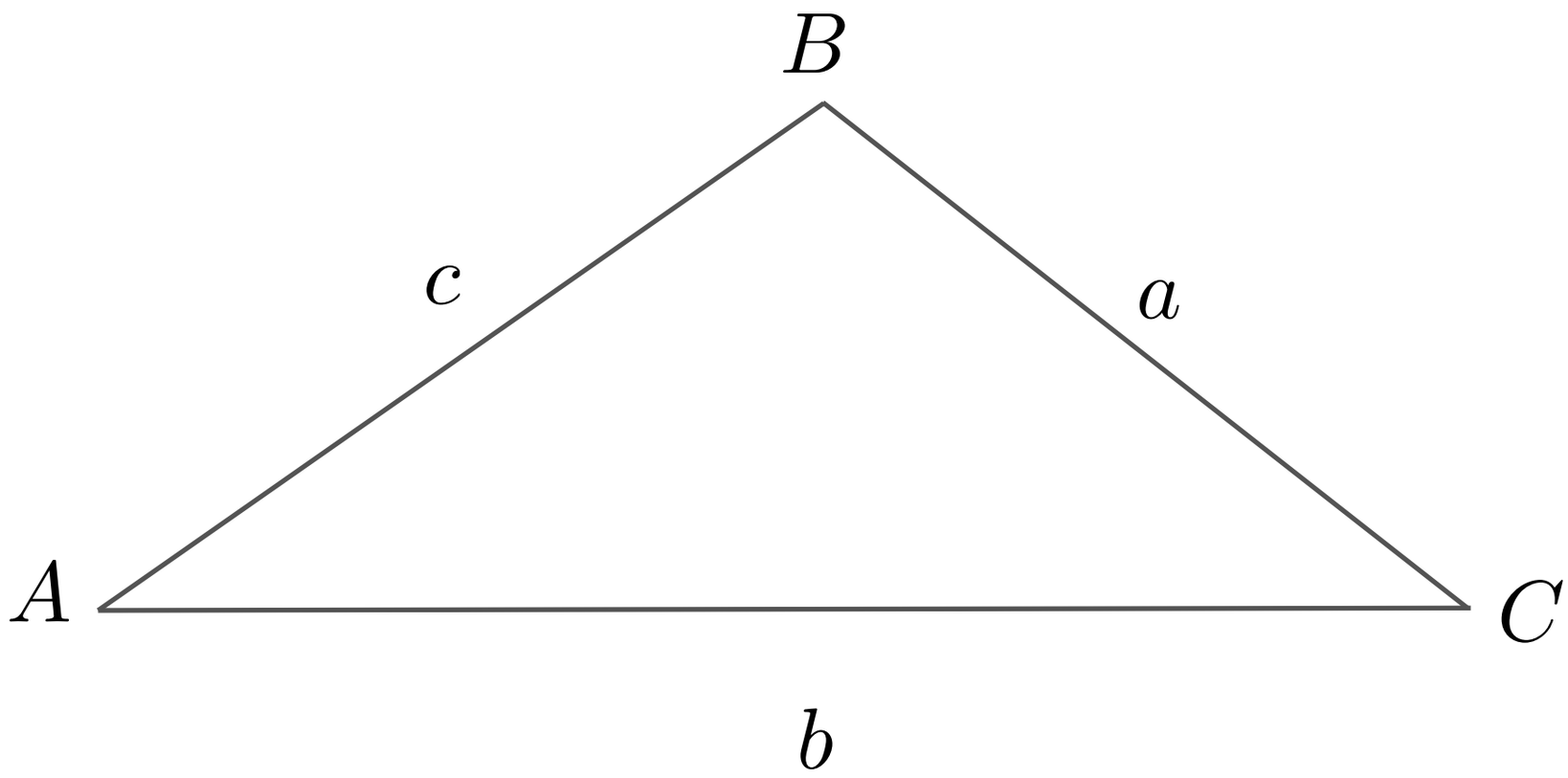

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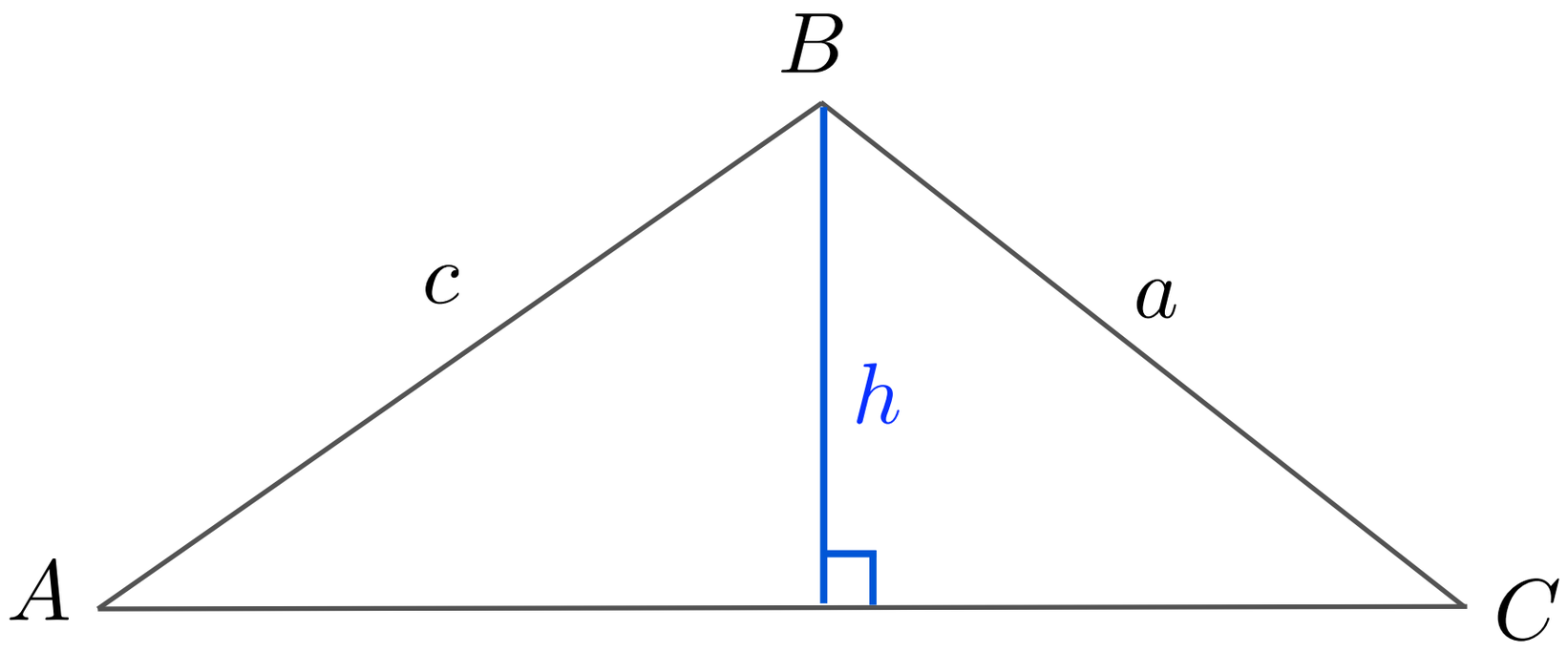

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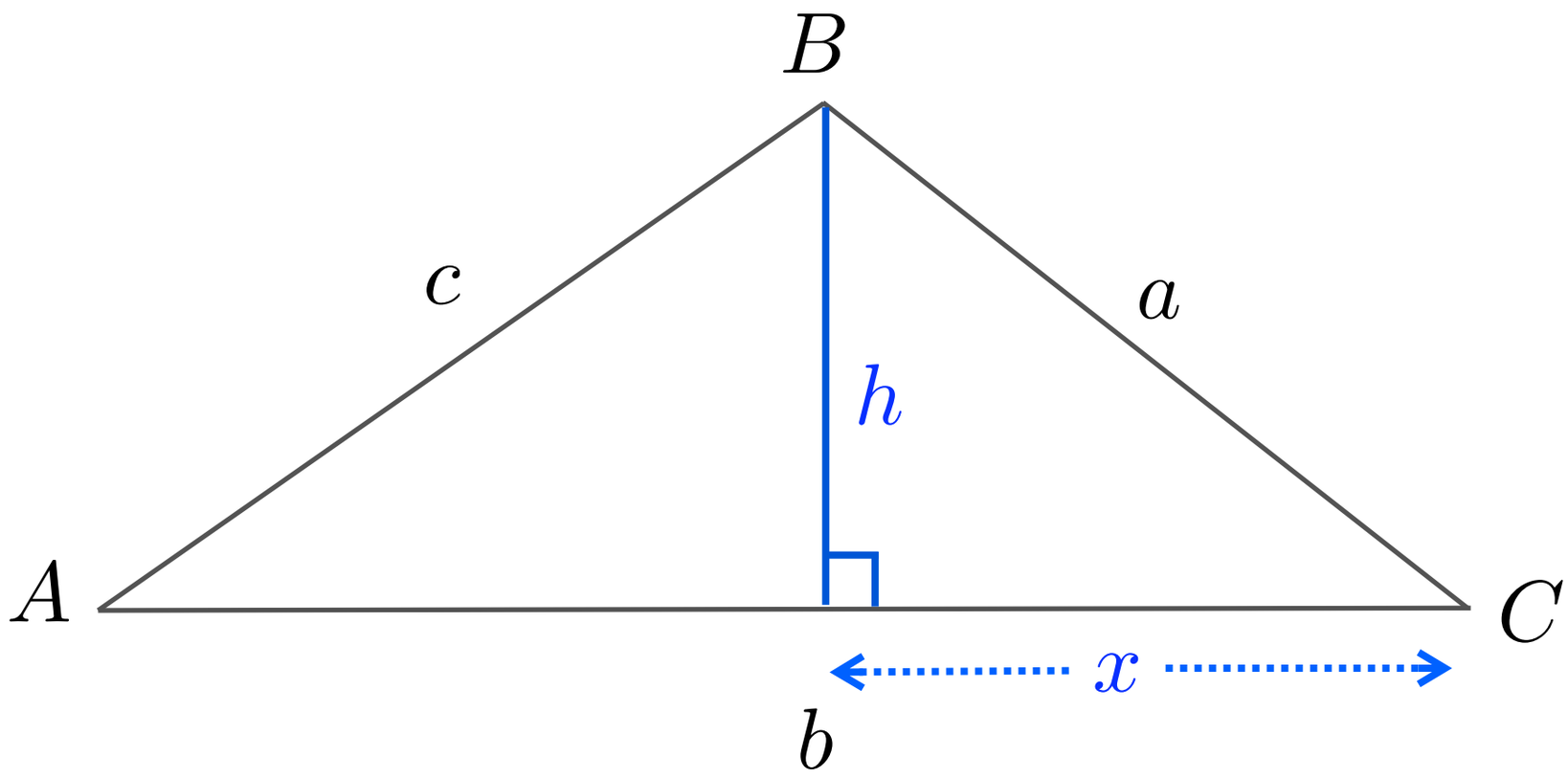

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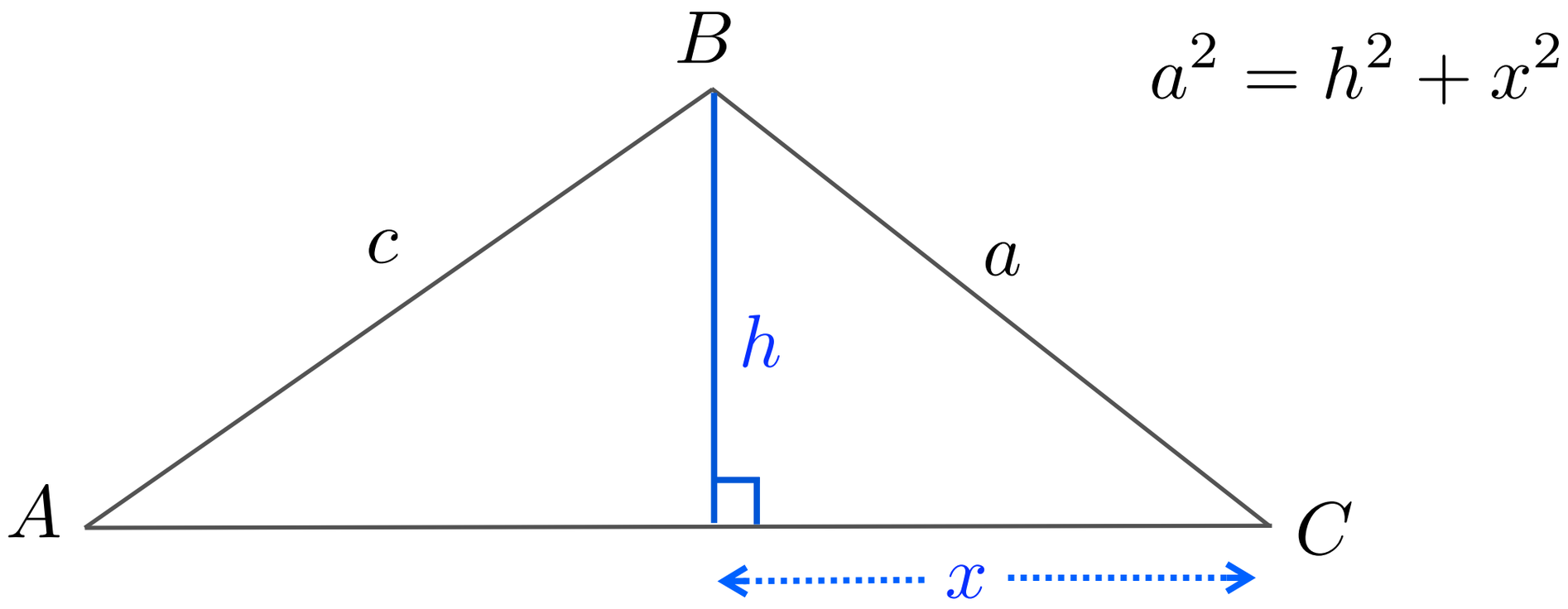
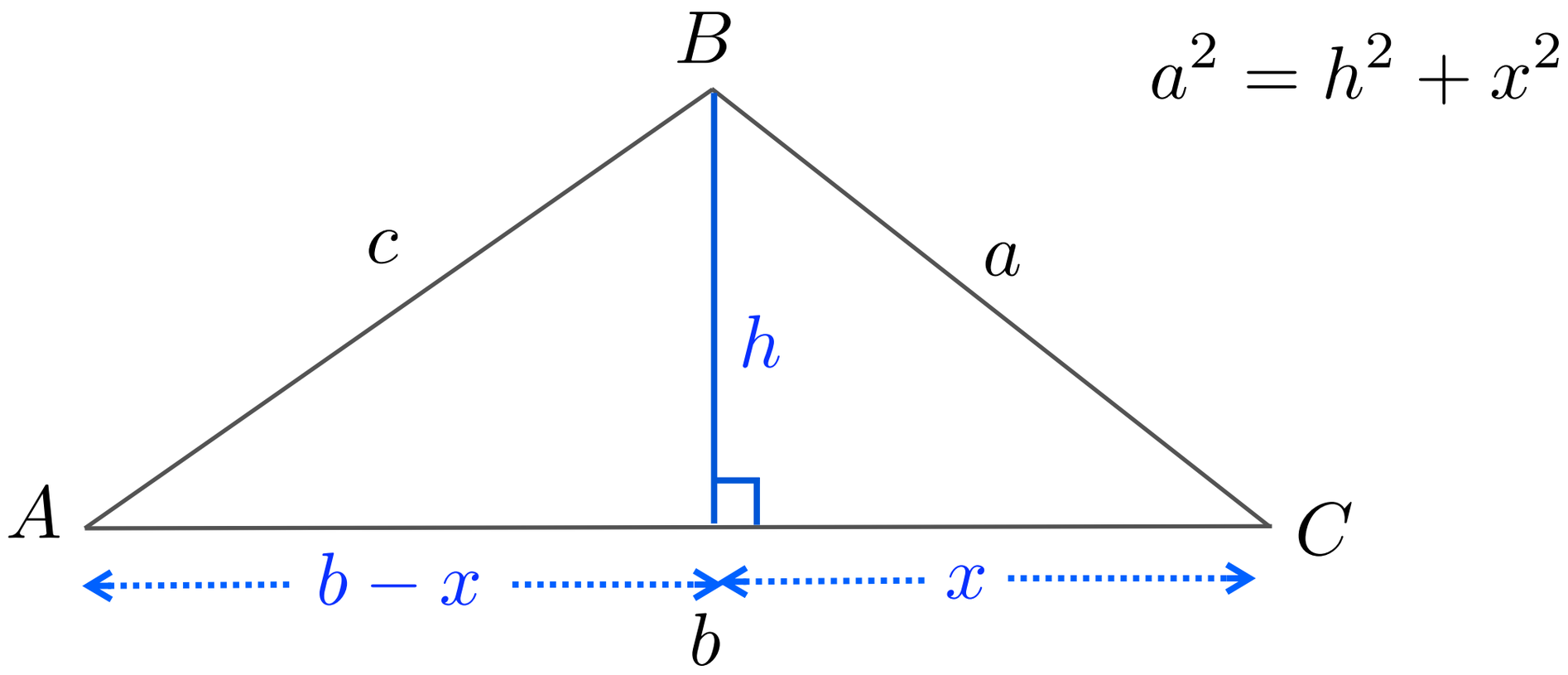


$$a^2 = h^2 + x^2$$

b

Loi des cosinus

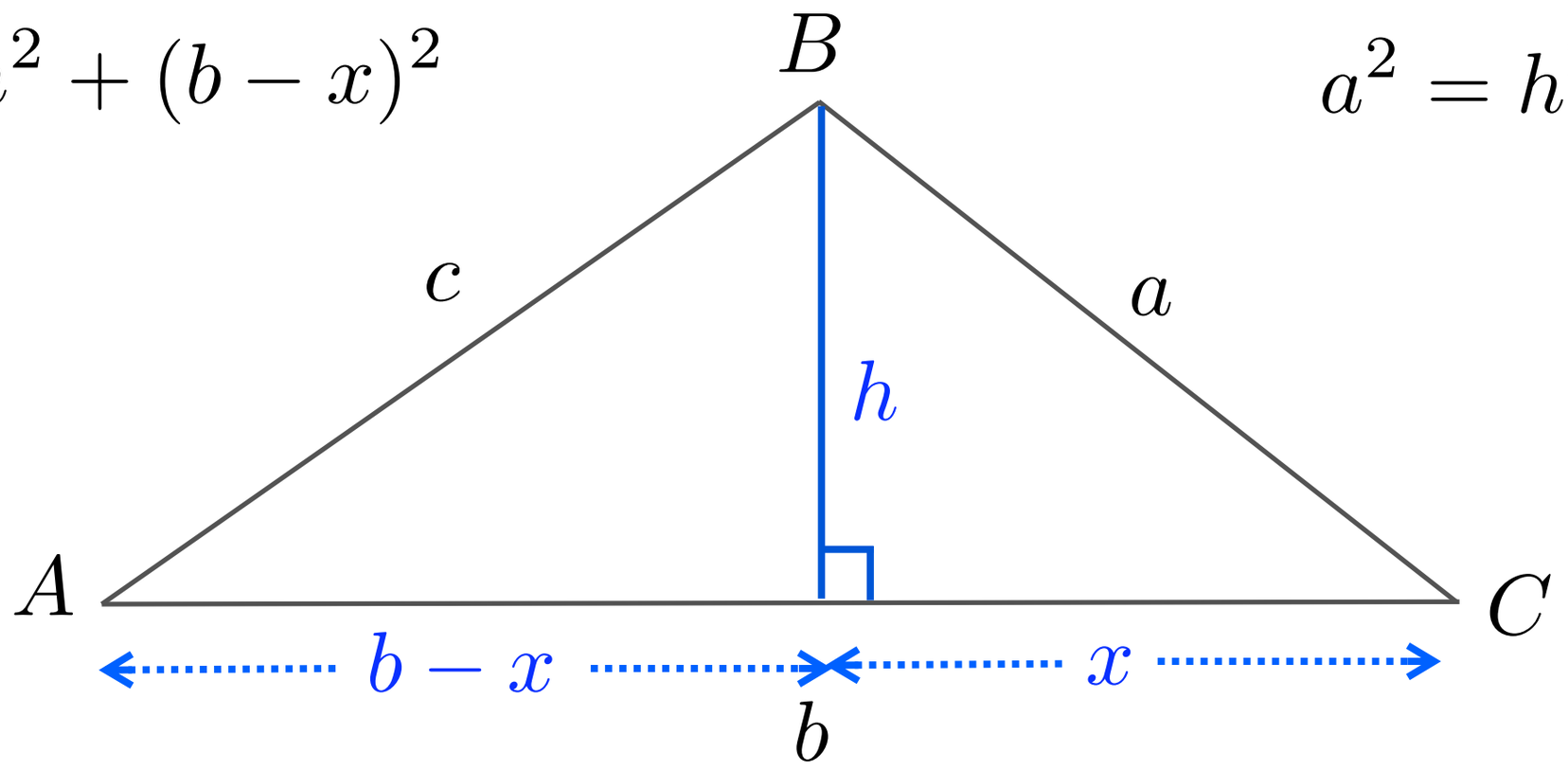


$$a^2 = h^2 + x^2$$

Loi des cosinus

$$c^2 = h^2 + (b - x)^2$$

$$a^2 = h^2 + x^2$$



Loi des cosinus

$$c^2 = h^2 + (b-x)^2$$
$$h^2 = c^2 - (b-x)^2$$

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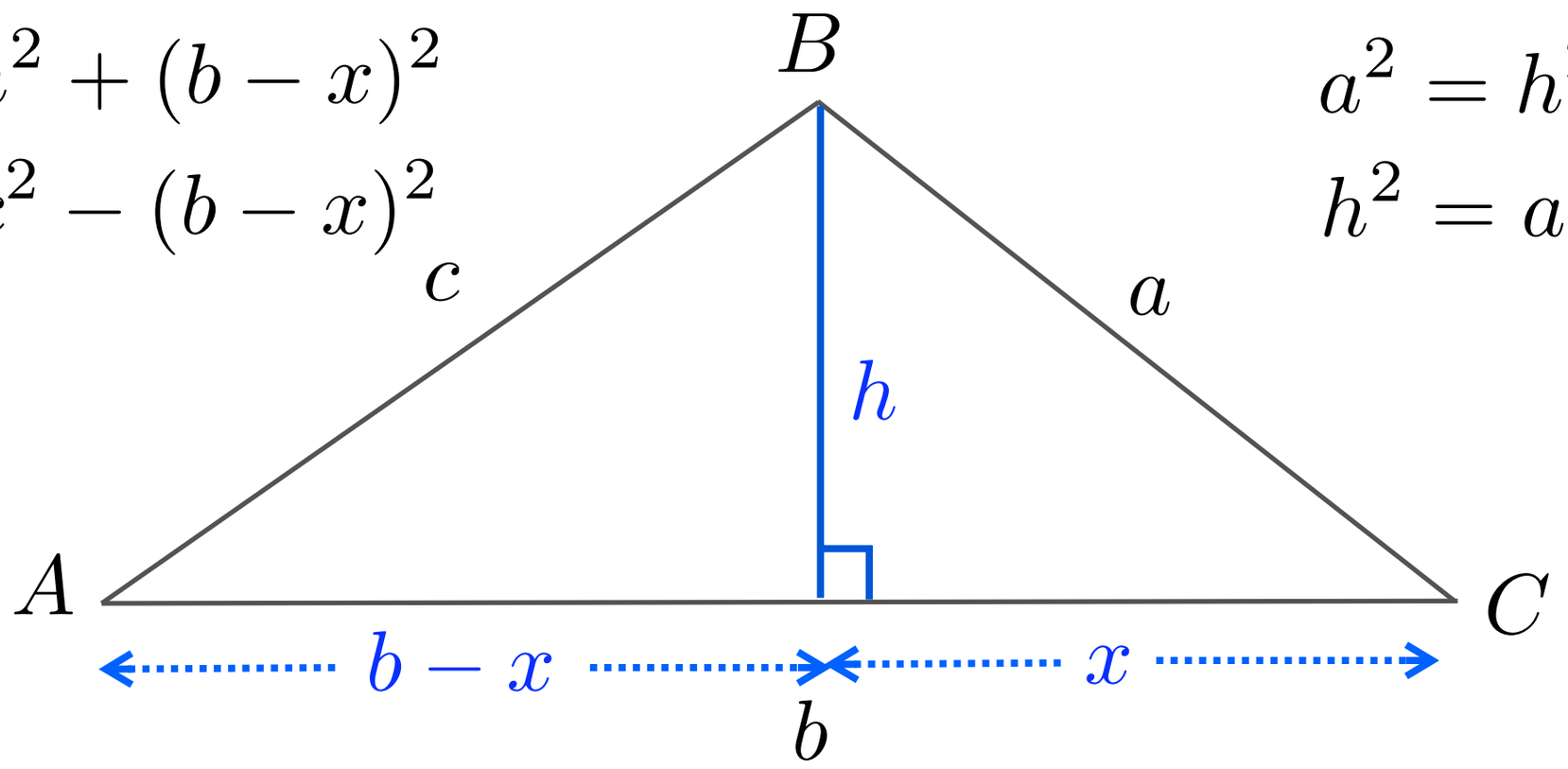

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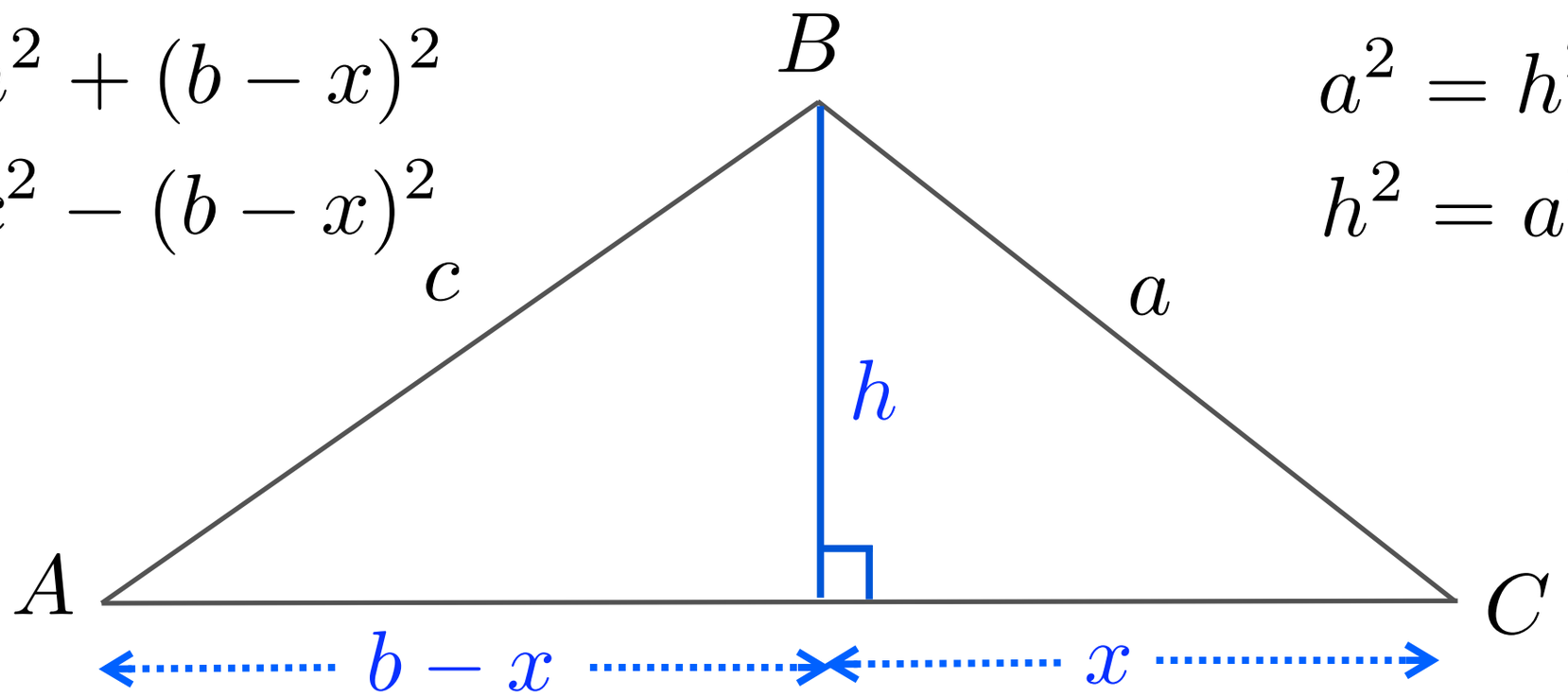

$$a^2 - x^2 = c^2 - (b^2 - 2bx + x^2)$$

Loi des cosinus

$$c^2 = h^2 + (b - x)^2$$

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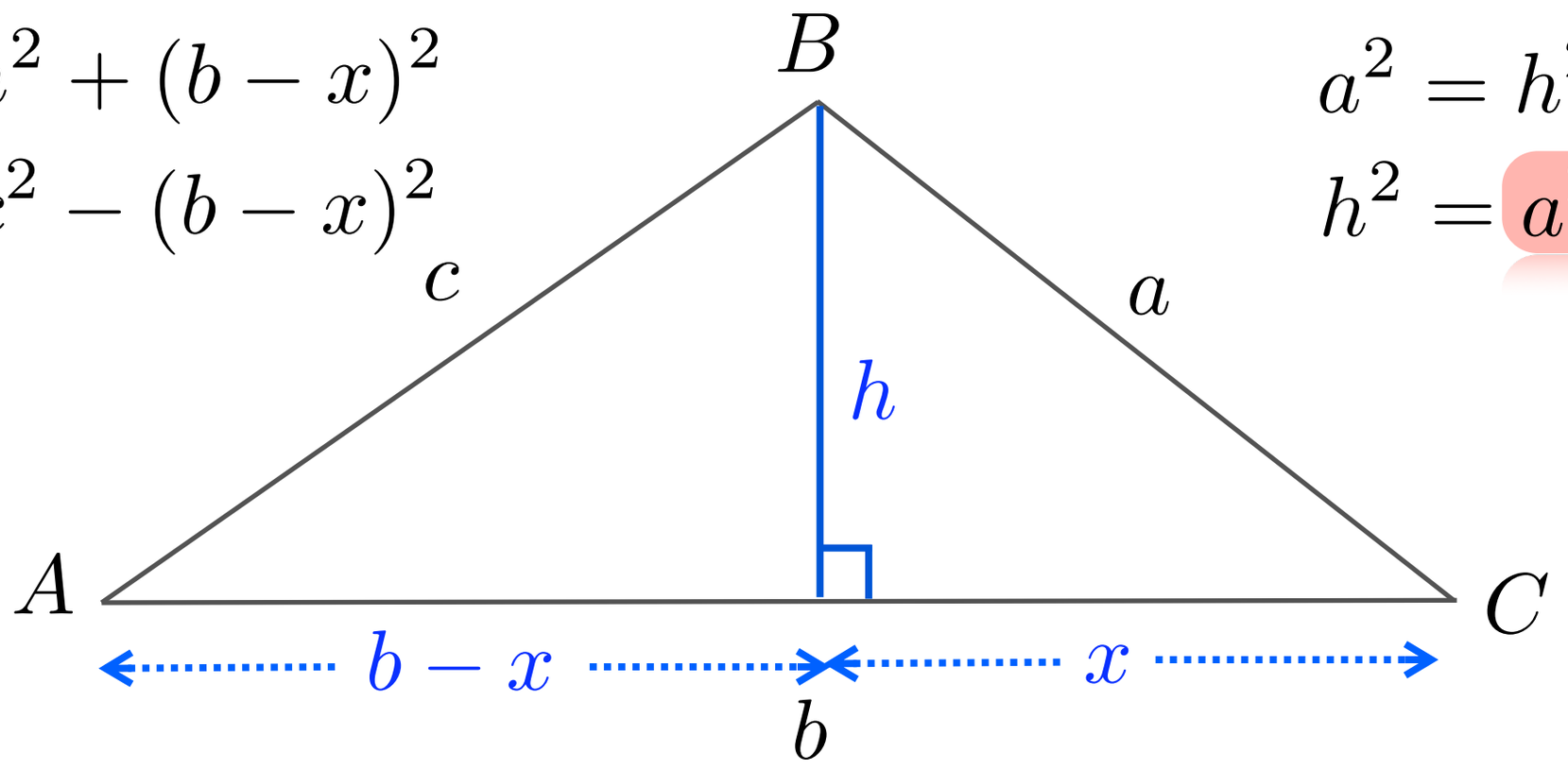

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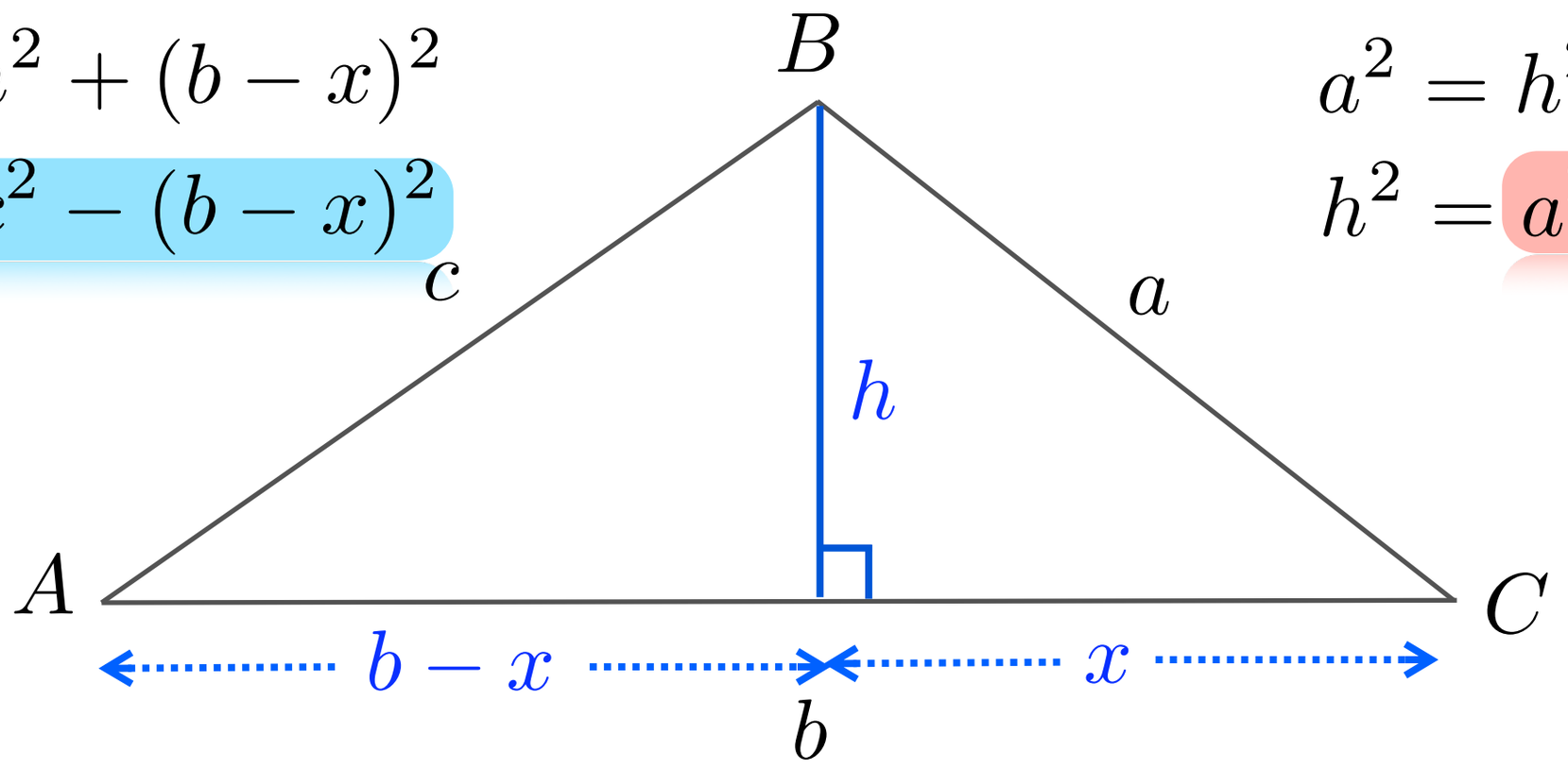

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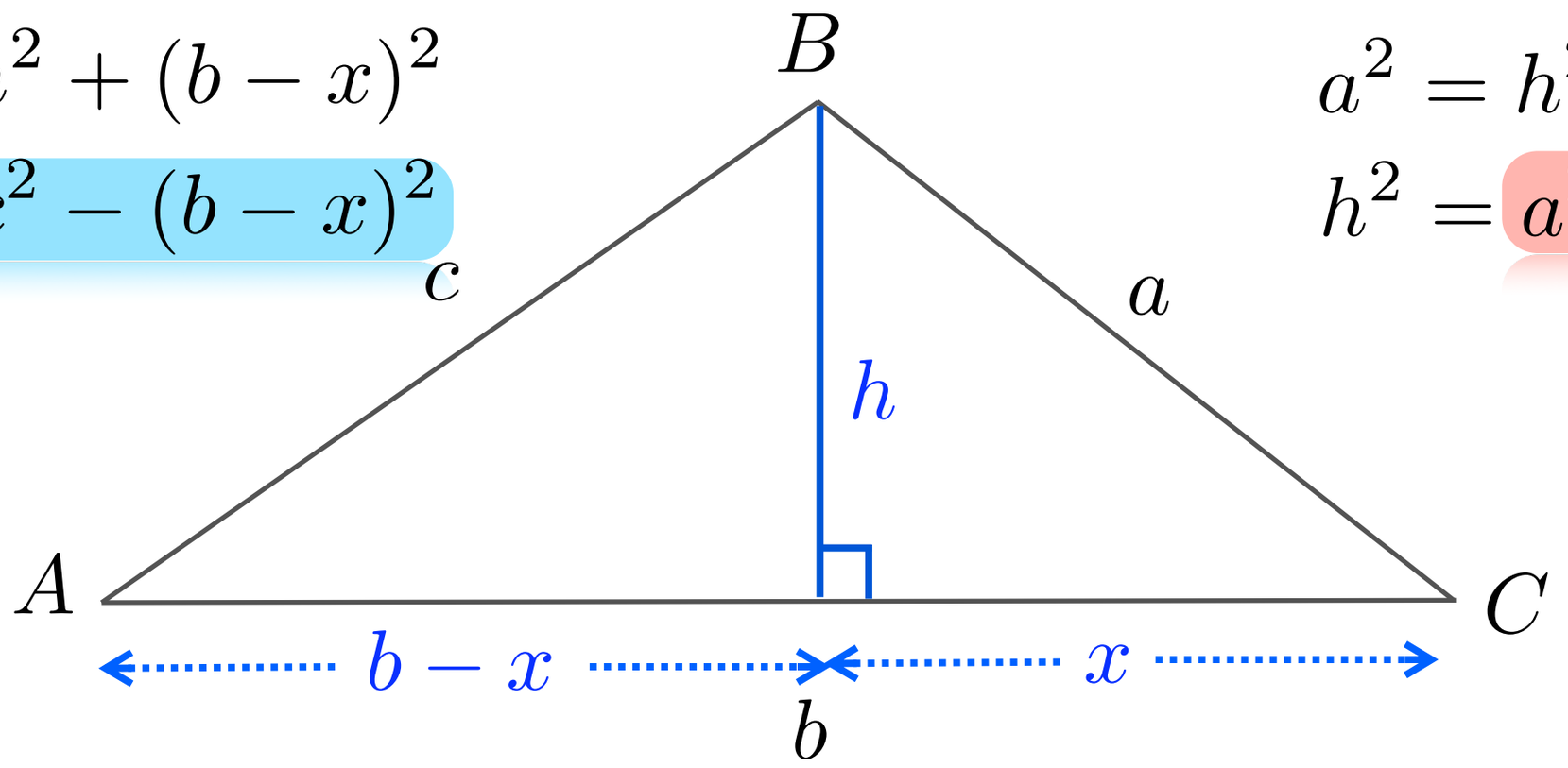

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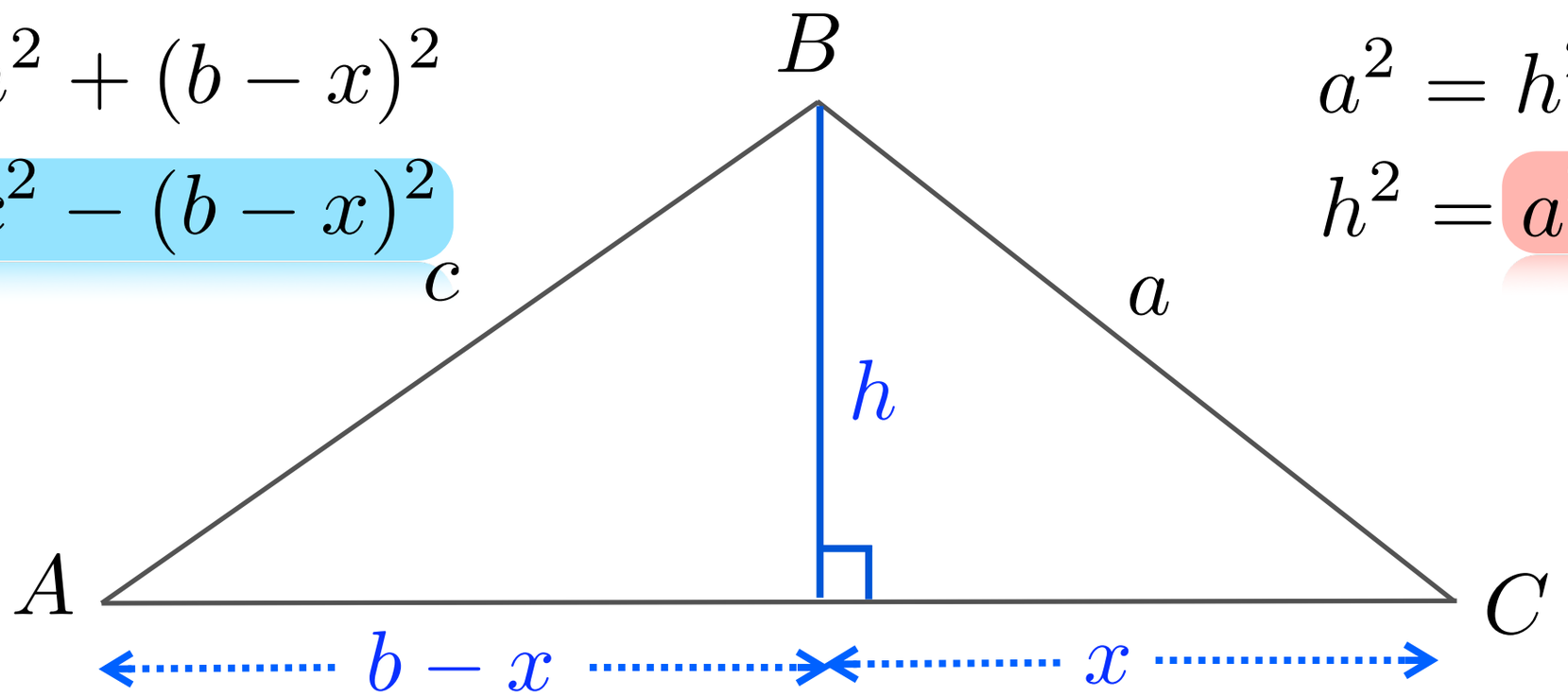

$$a^2 - x^2 = c^2 - (b^2 - 2bx + x^2)$$

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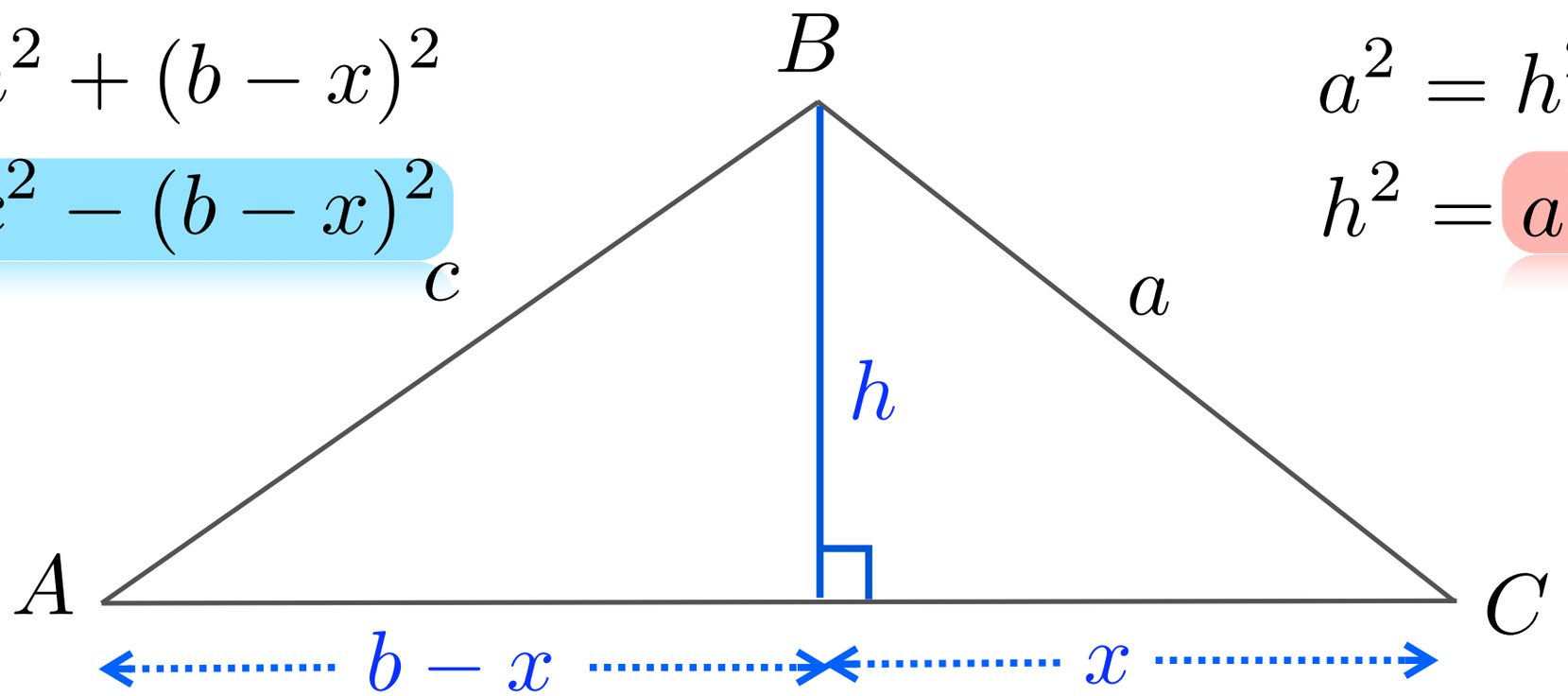

$$a^2 - x^2 = c^2 - (b^2 - 2bx + x^2)$$

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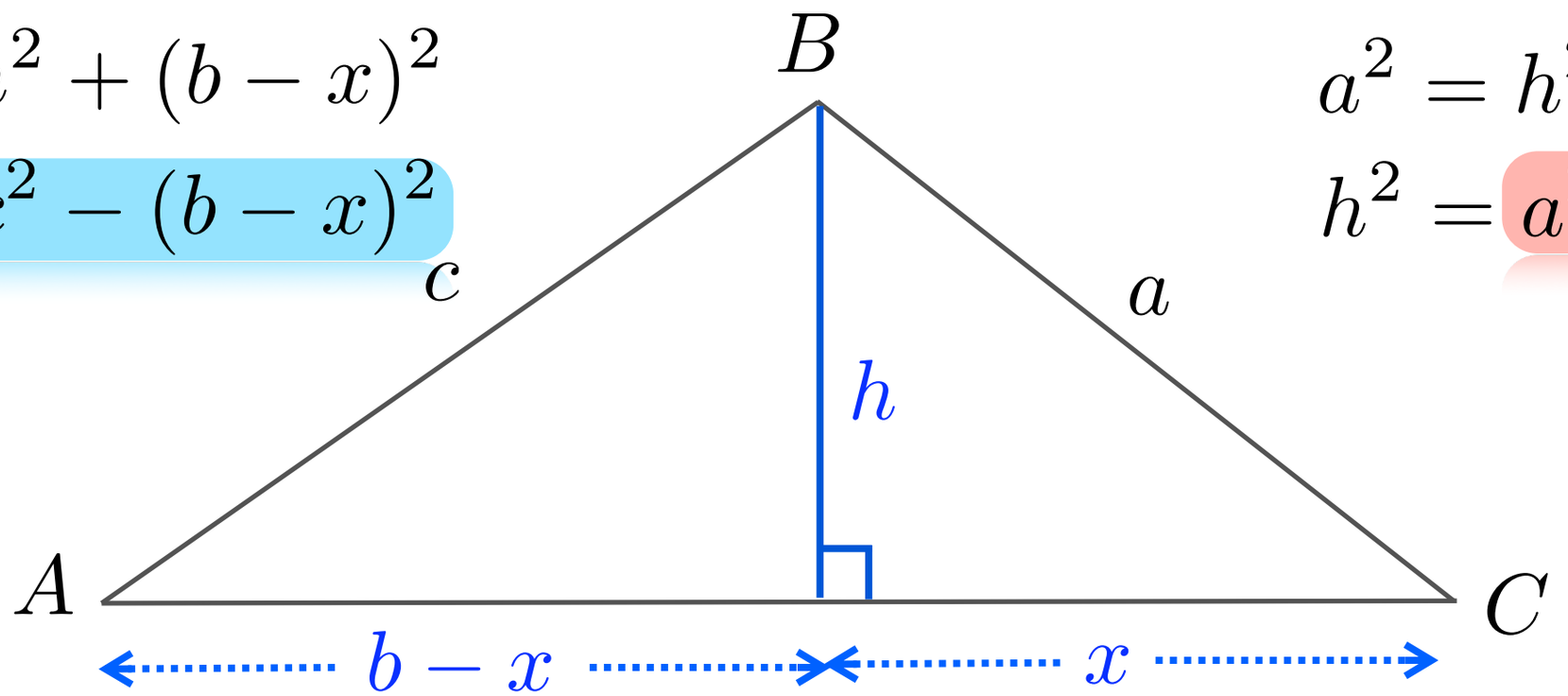

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$$\frac{x}{a} = \cos C$$

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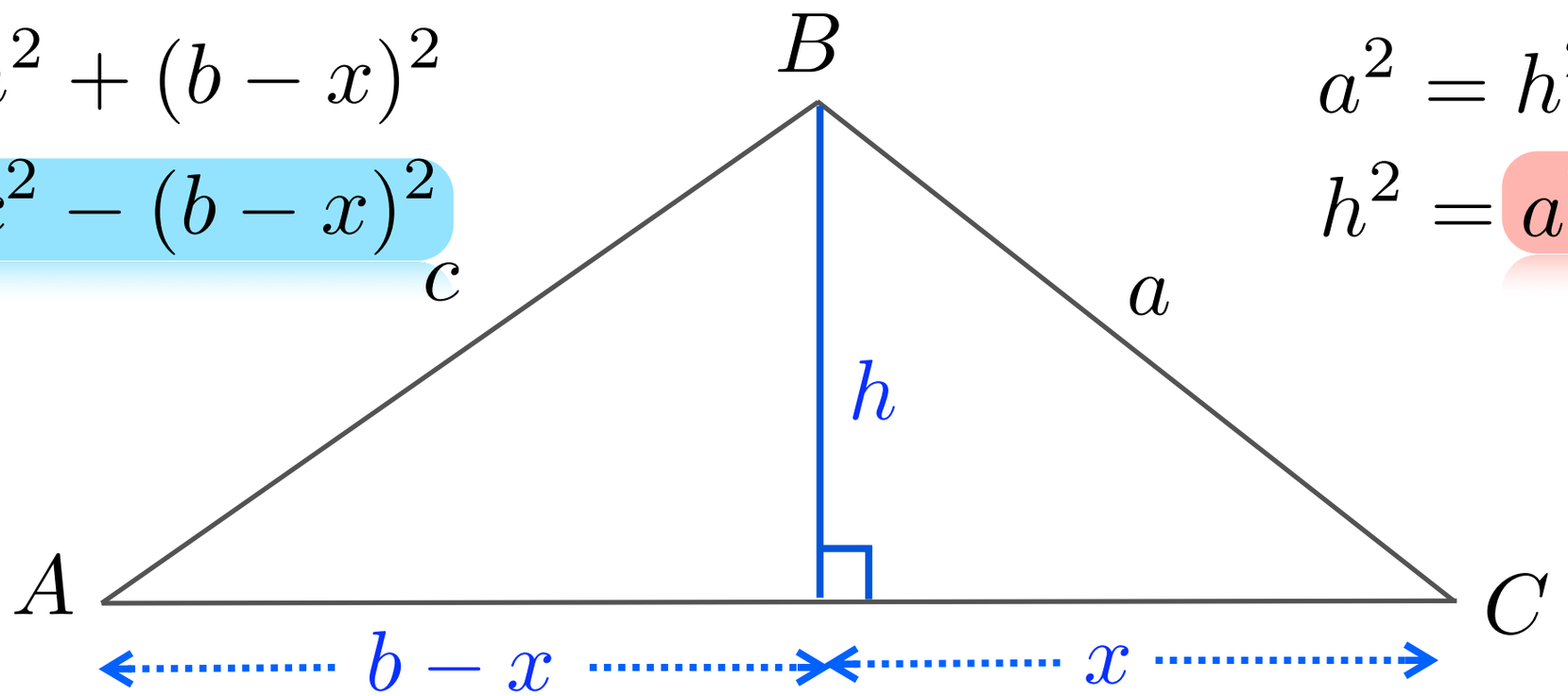

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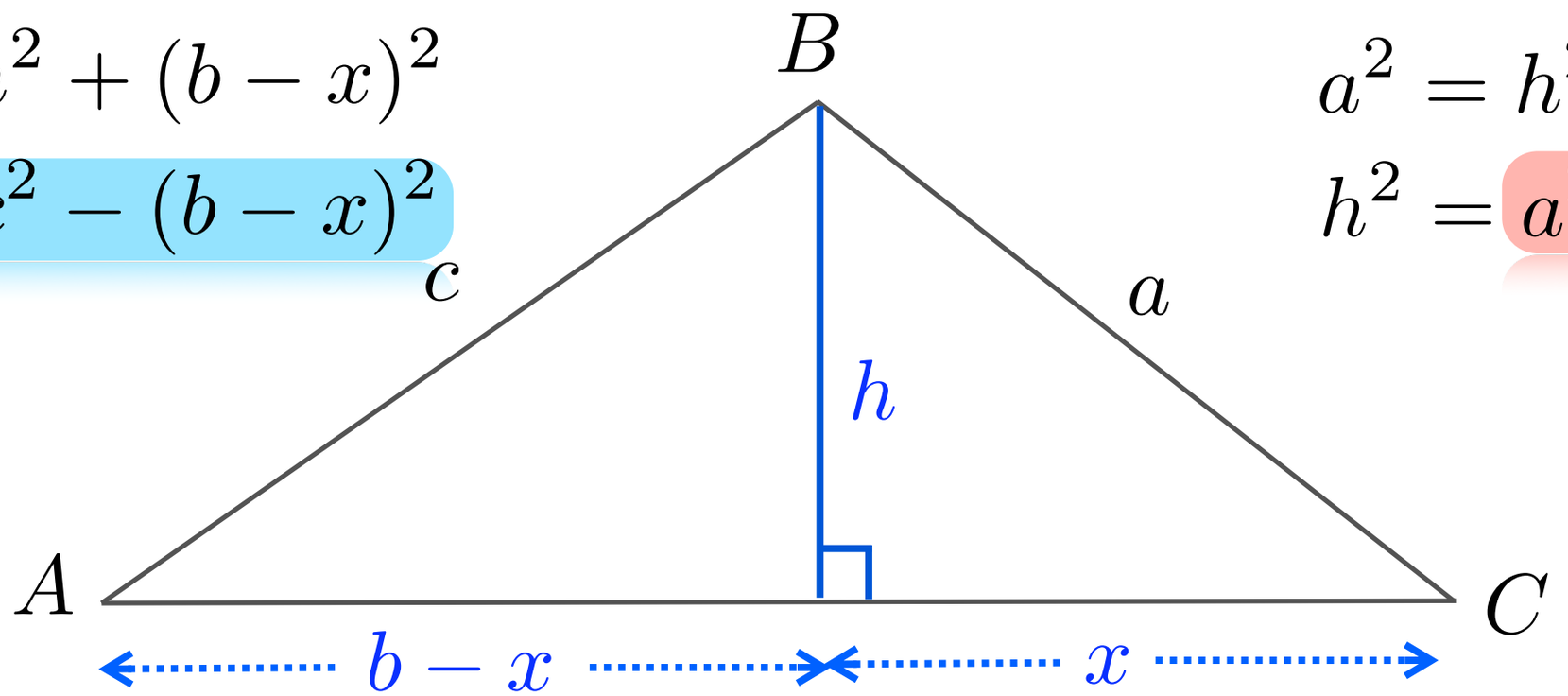

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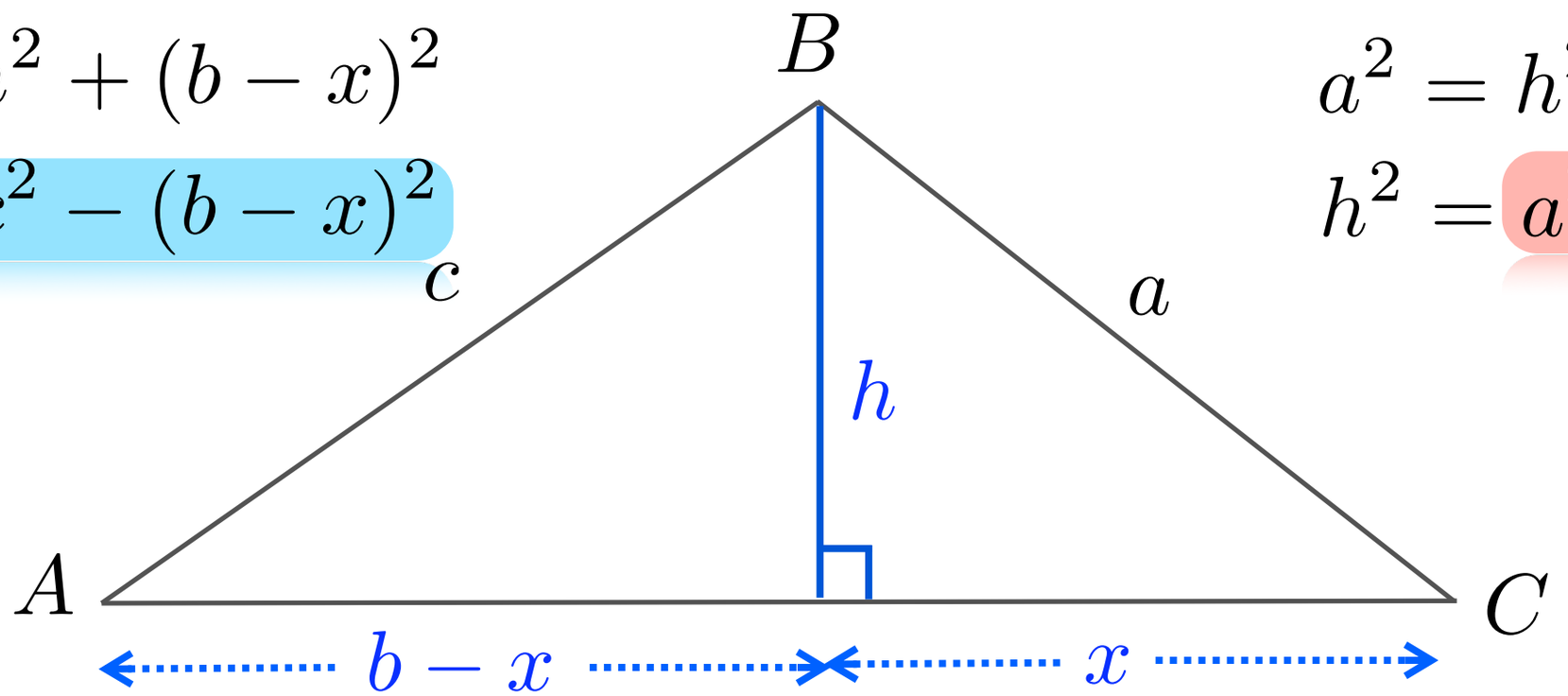

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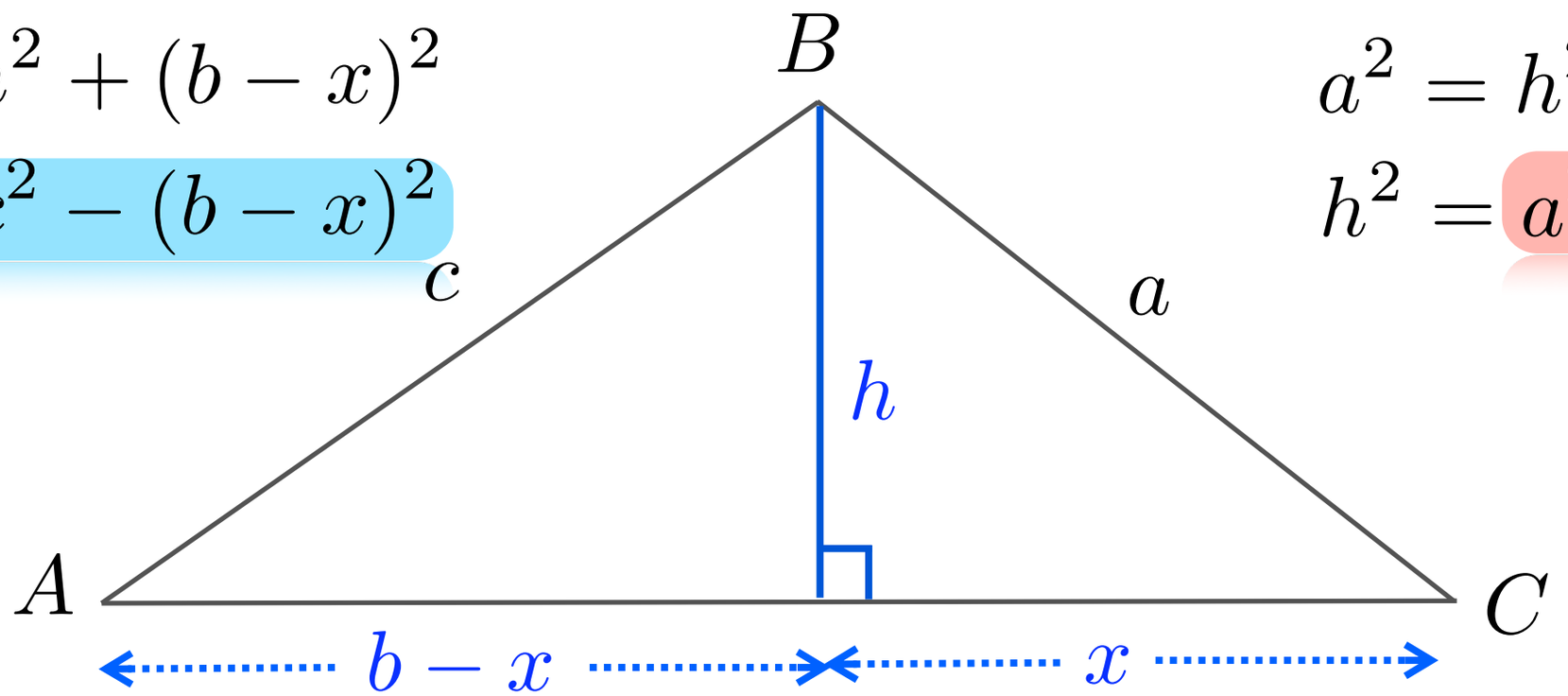

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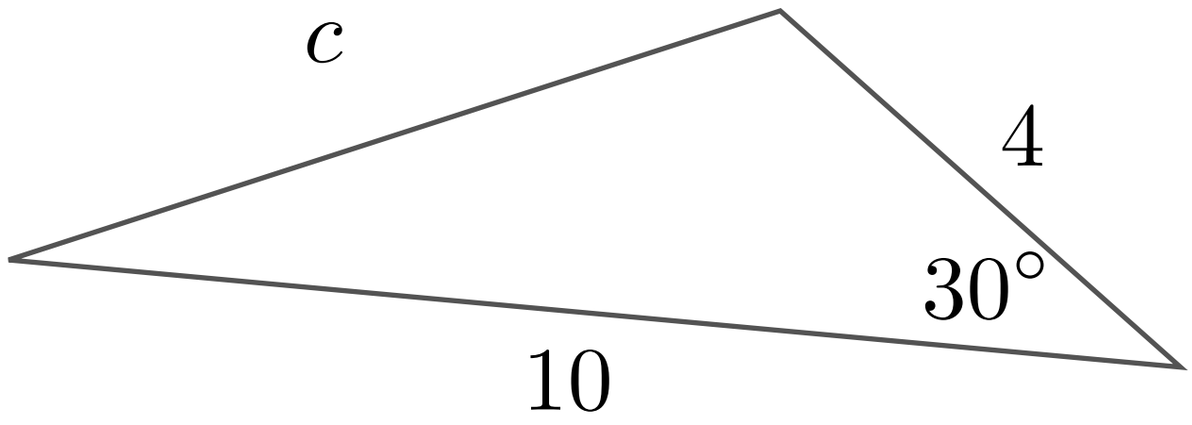
Exemple



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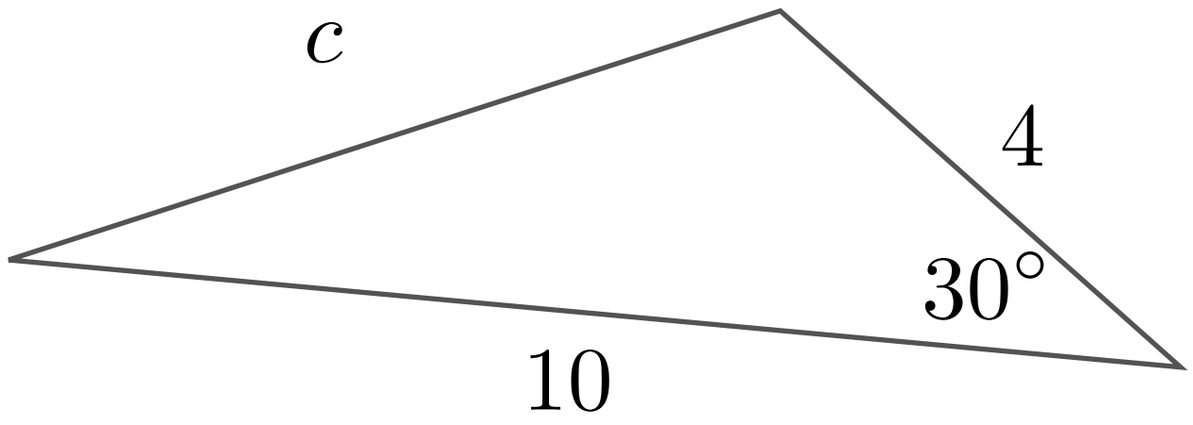
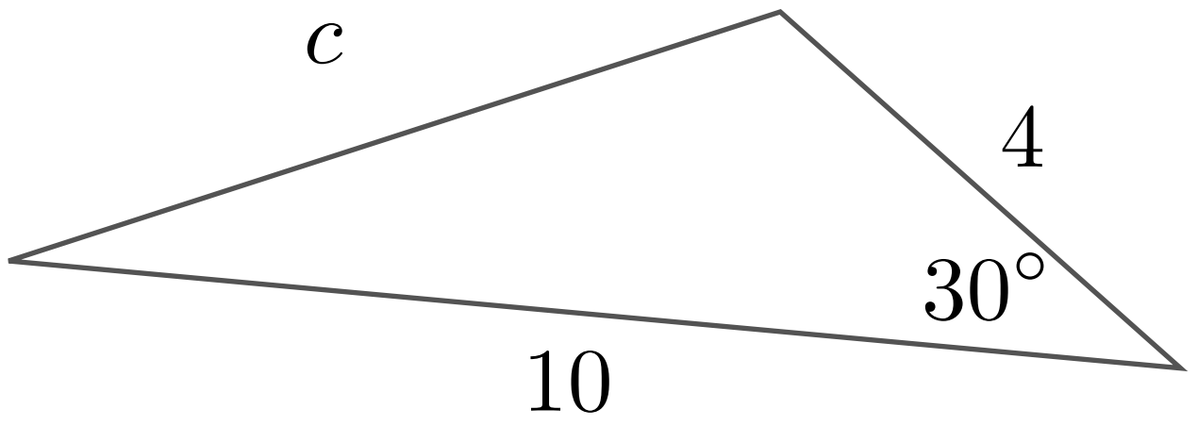


$$c^2 = 10^2 + 4^2 - 10 \times 4 \times \cos 30°$$

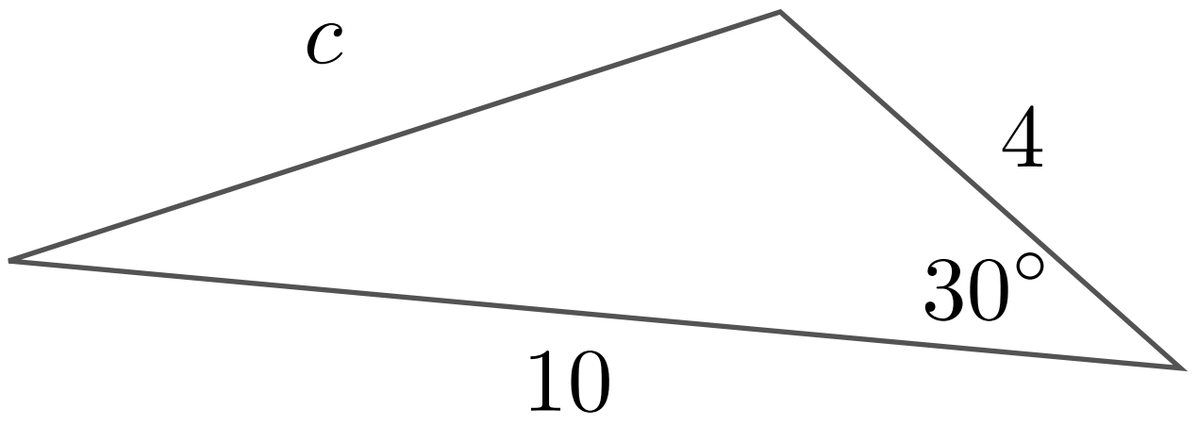
Exemple



$$c^2 = 10^2 + 4^2 - 10 \times 4 \times \cos 30°$$

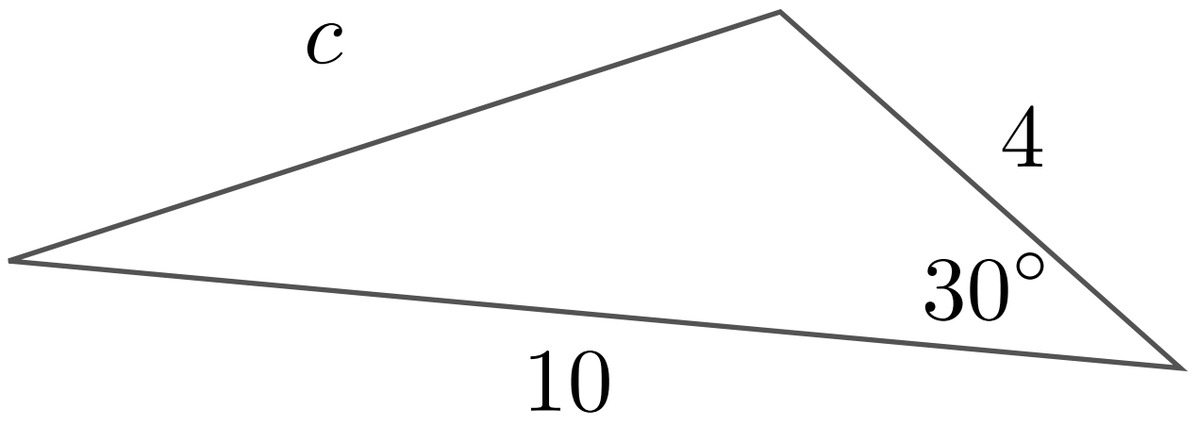
$$= 100 + 16 - 40 \times \frac{\sqrt{3}}{2}$$

Exemple



$$
\begin{aligned}
c^2 &= 10^2 + 4^2 - 10 \times 4 \times \cos 30° \\
&= 100 + 16 - 40 \times \frac{\sqrt{3}}{2} \\
&= 116 - 20 \times \sqrt{3}
\end{aligned}
$$

Exemple



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$$= 100 + 16 - 40 \times \frac{\sqrt{3}}{2}$$

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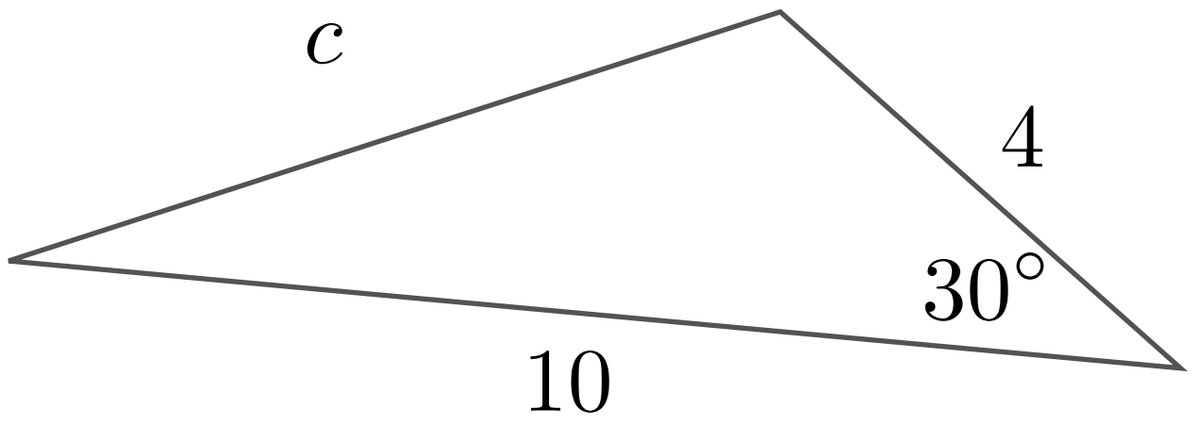
Donc

Exemple



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$$= 100 + 16 - 40 \times \frac{\sqrt{3}}{2}$$

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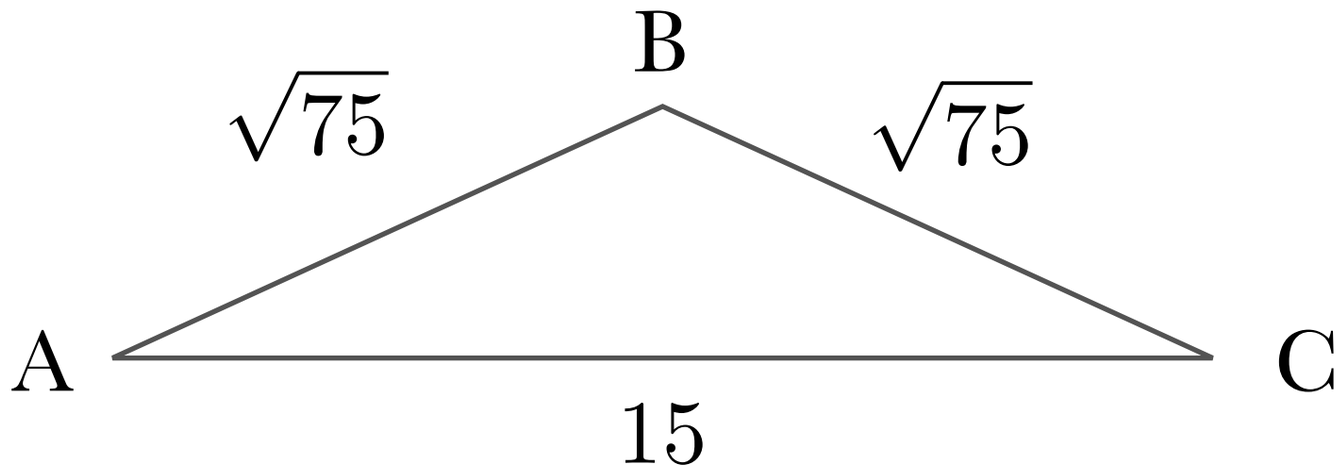
Donc

$$c = \sqrt{116 - 20 \times \sqrt{3}}$$

Exemple



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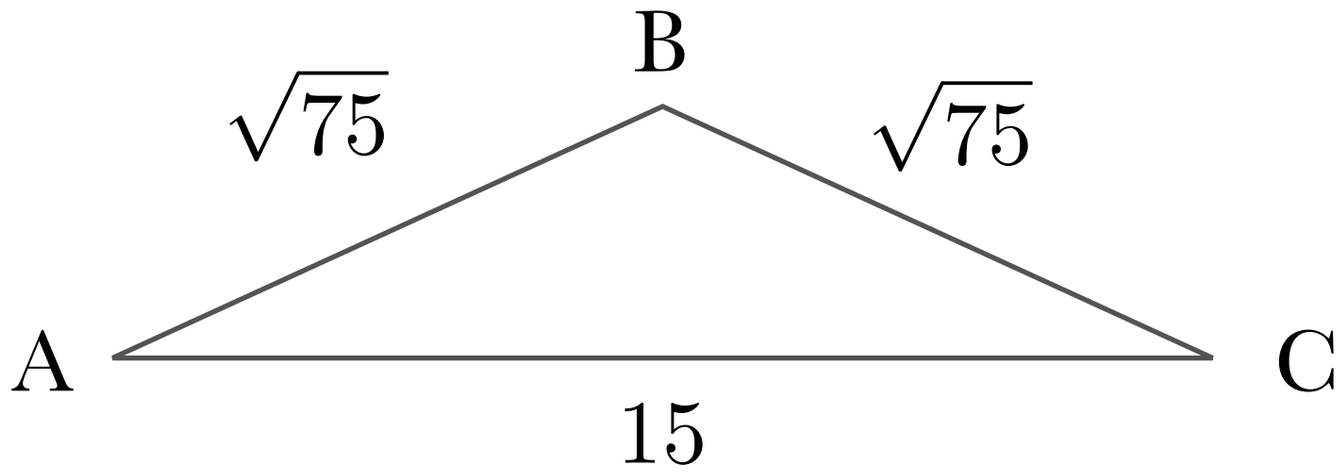
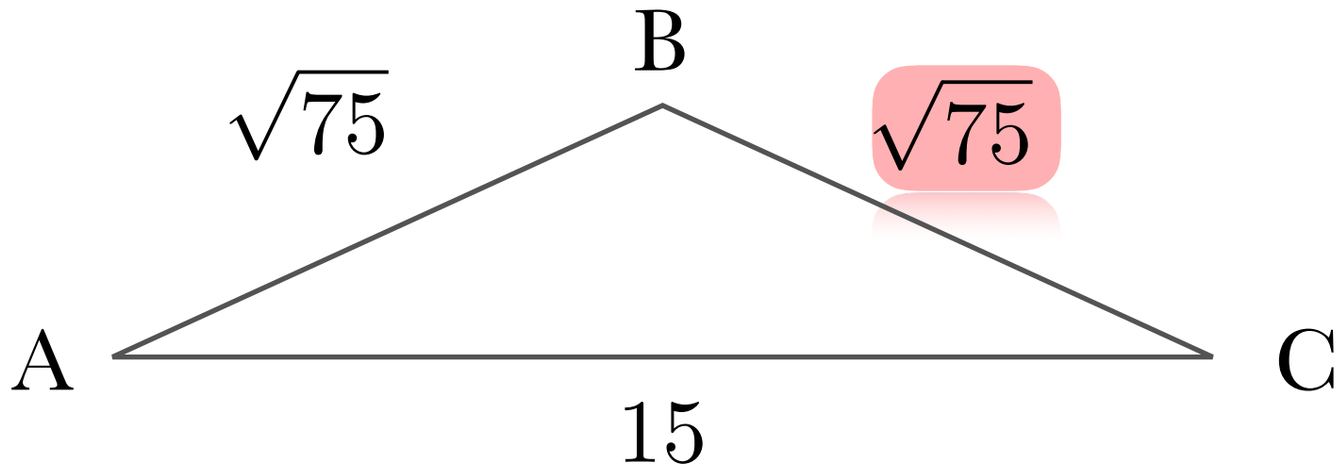


$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

Exemple



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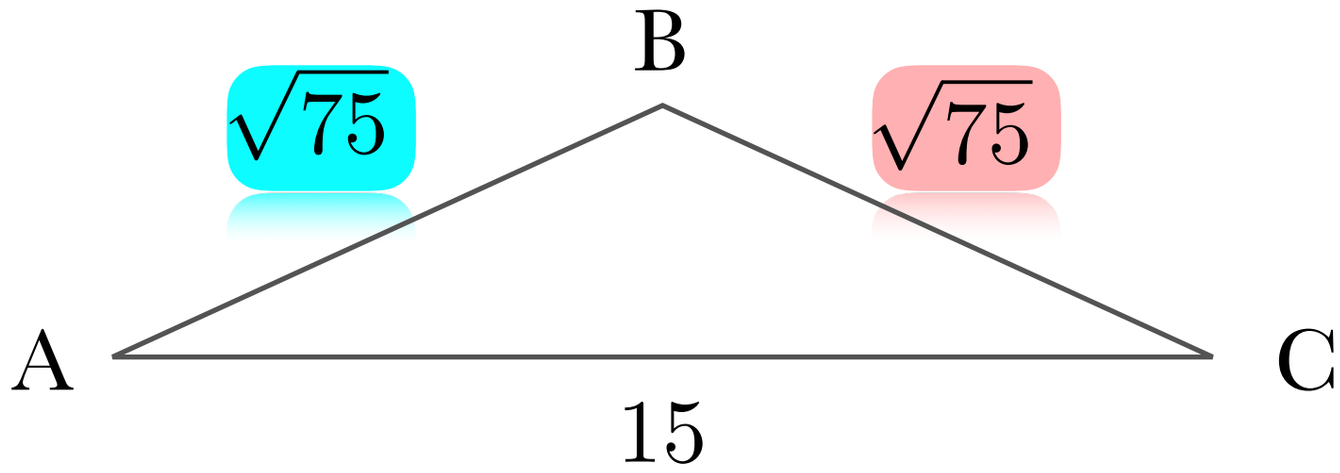

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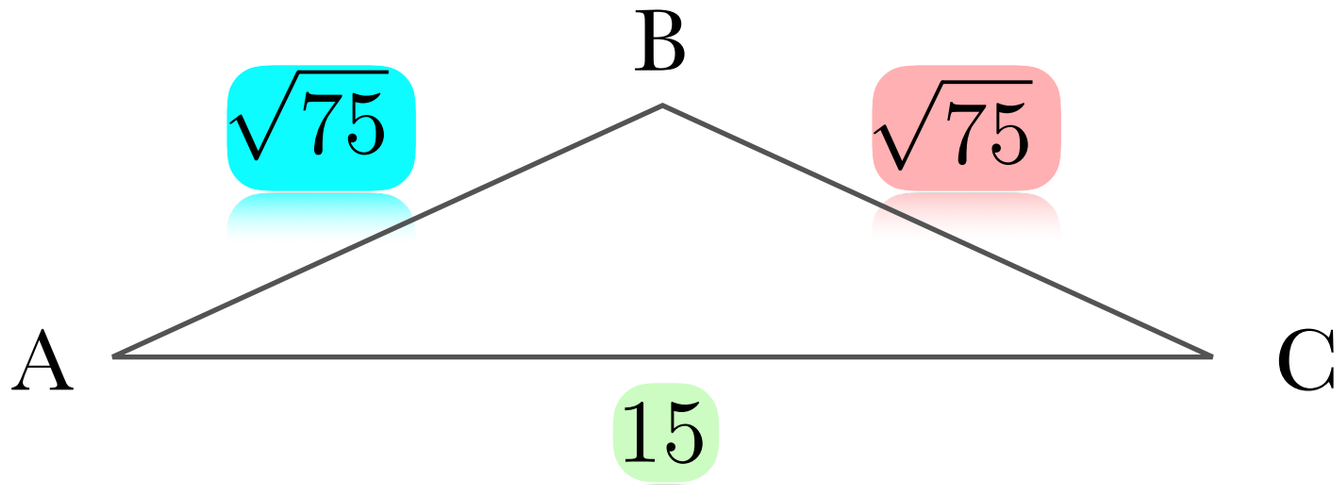

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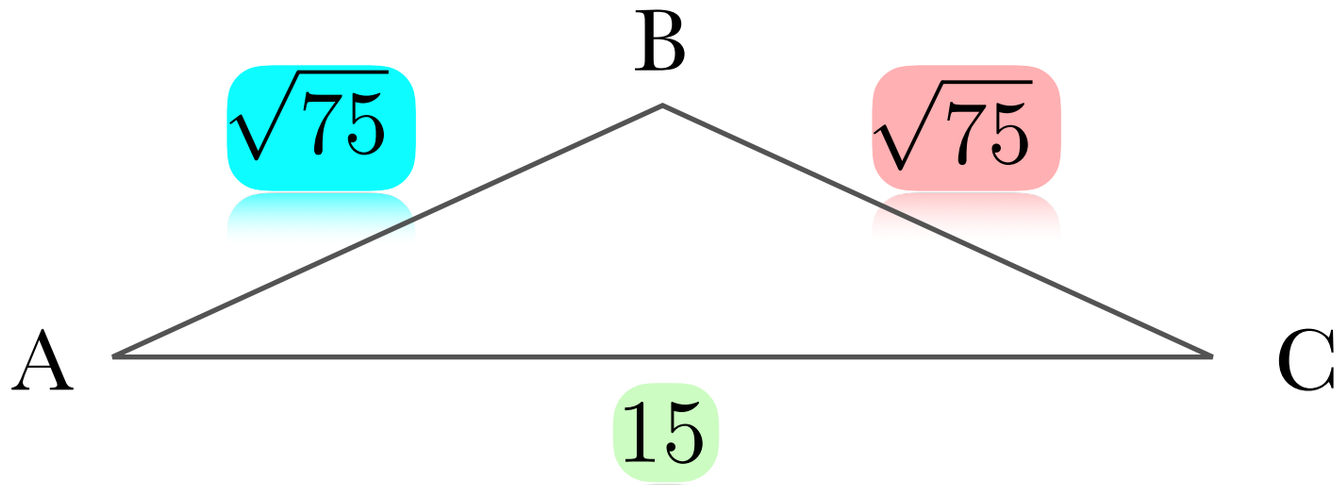

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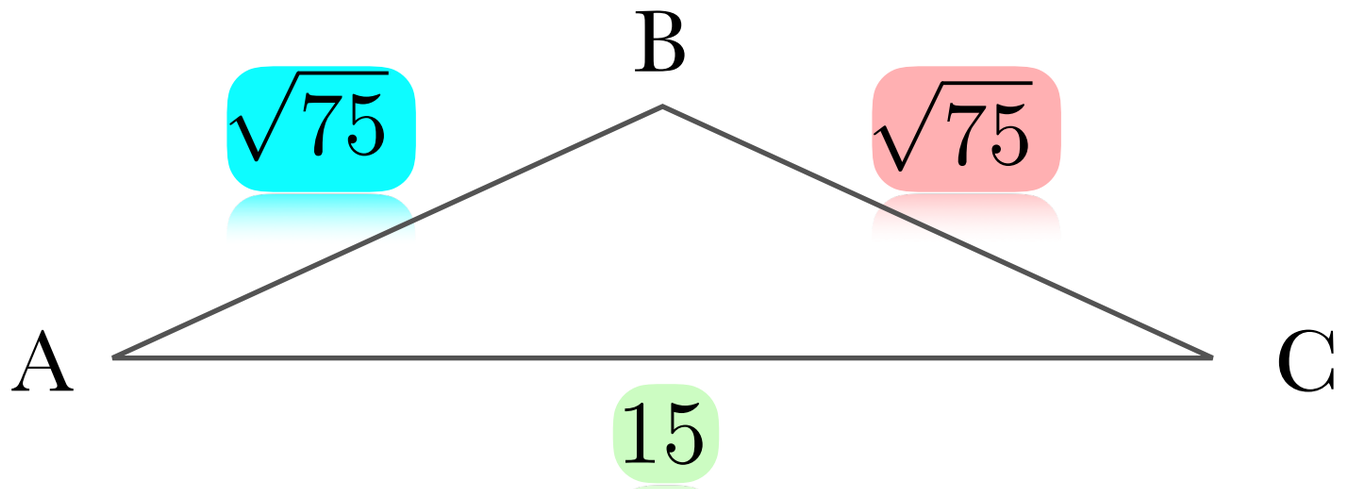

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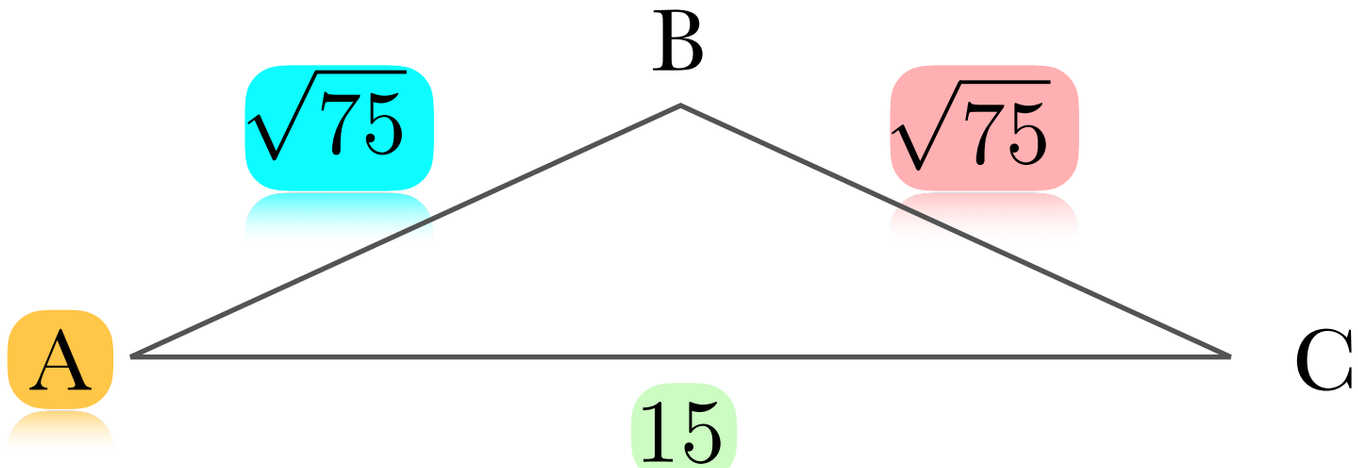

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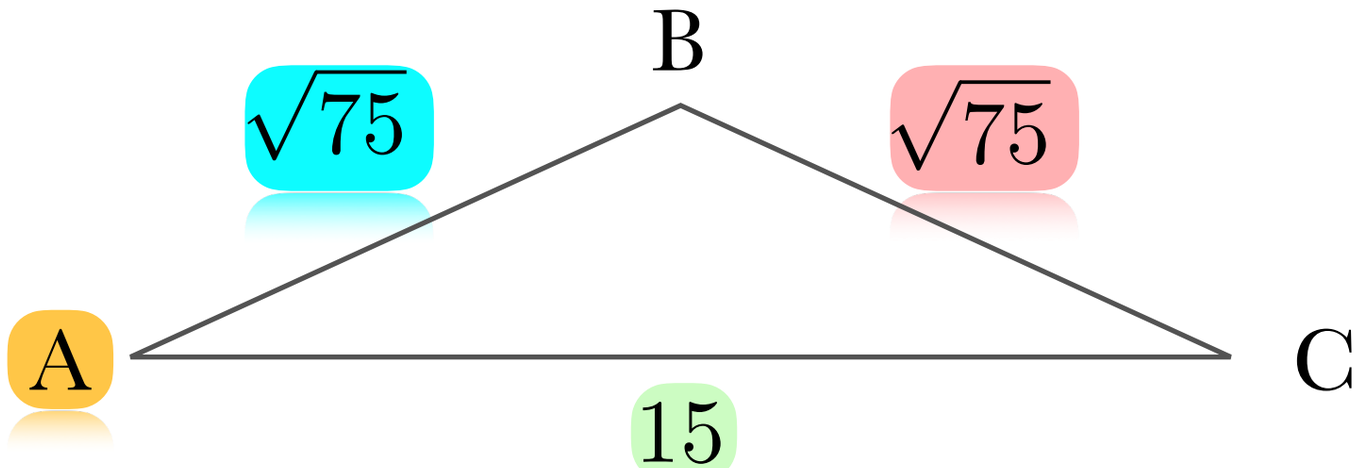
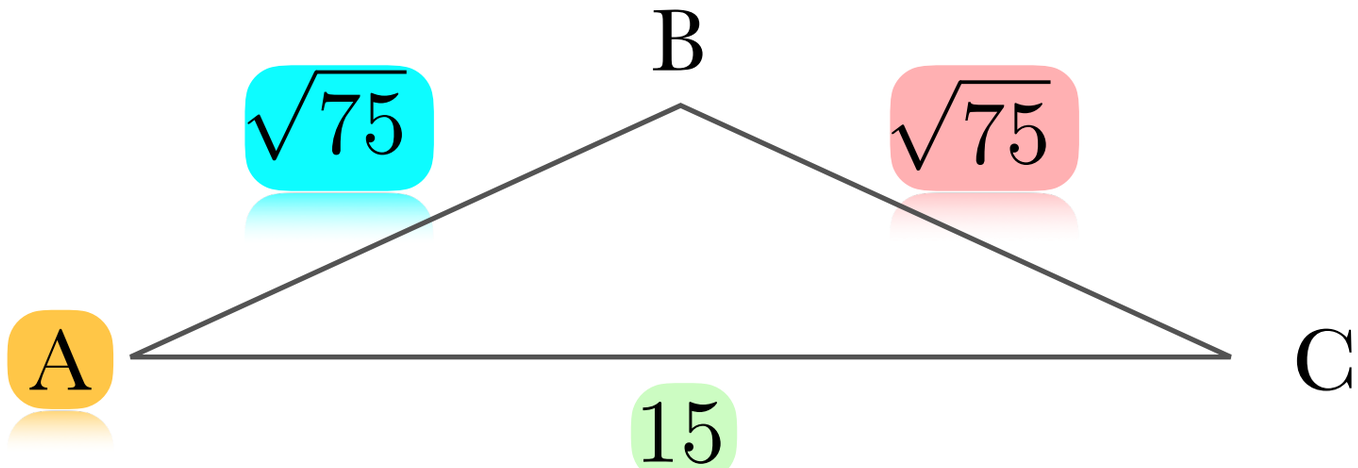


$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

Exemple



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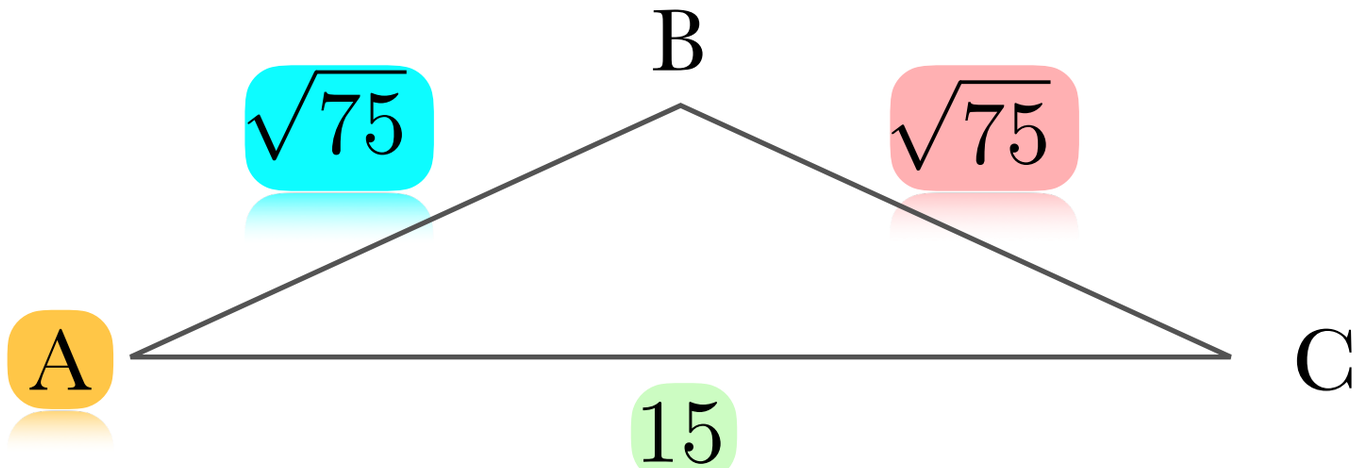

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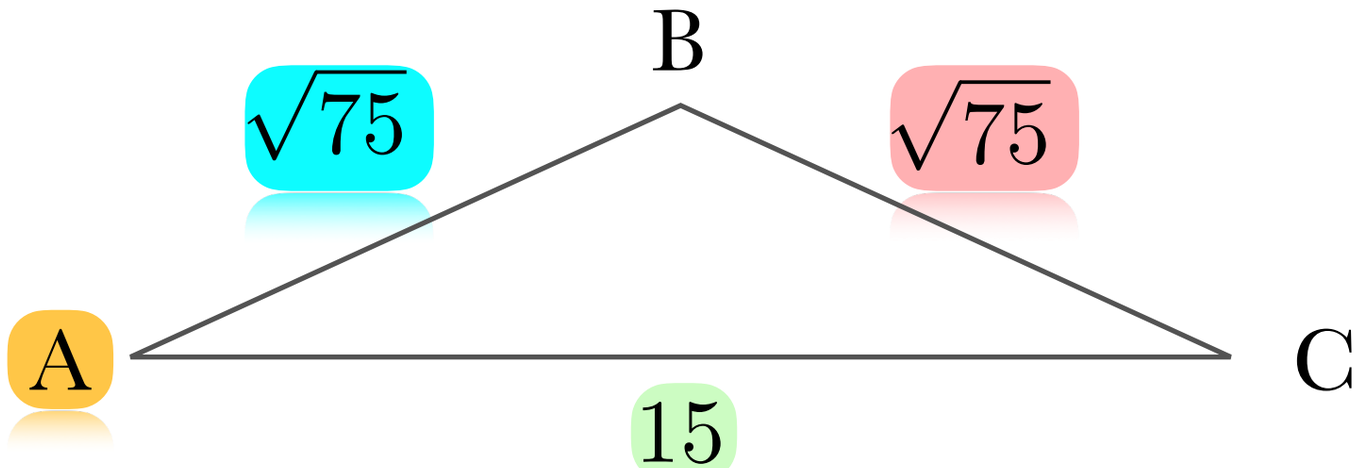

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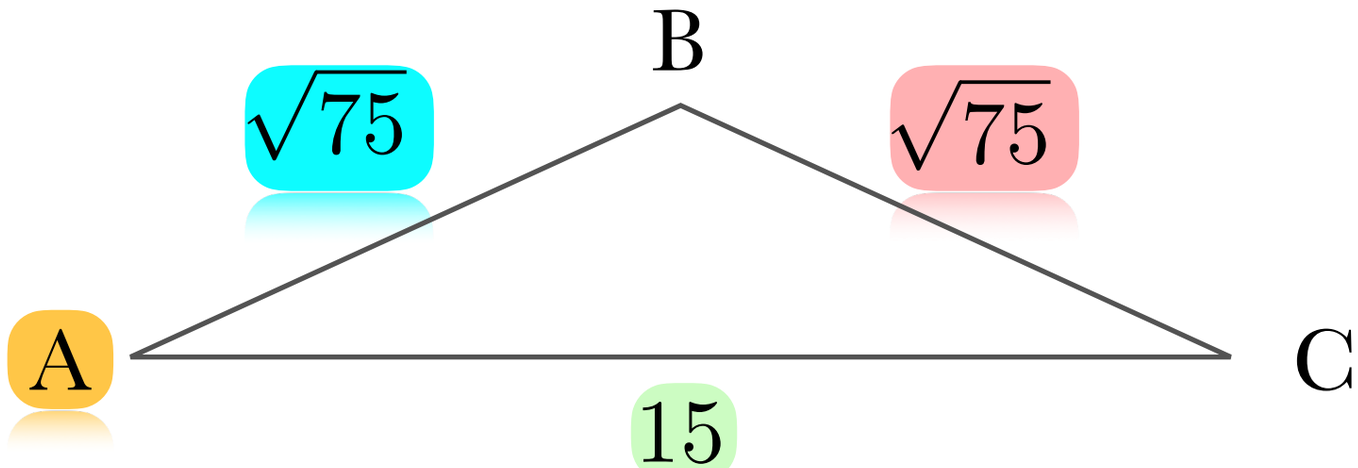

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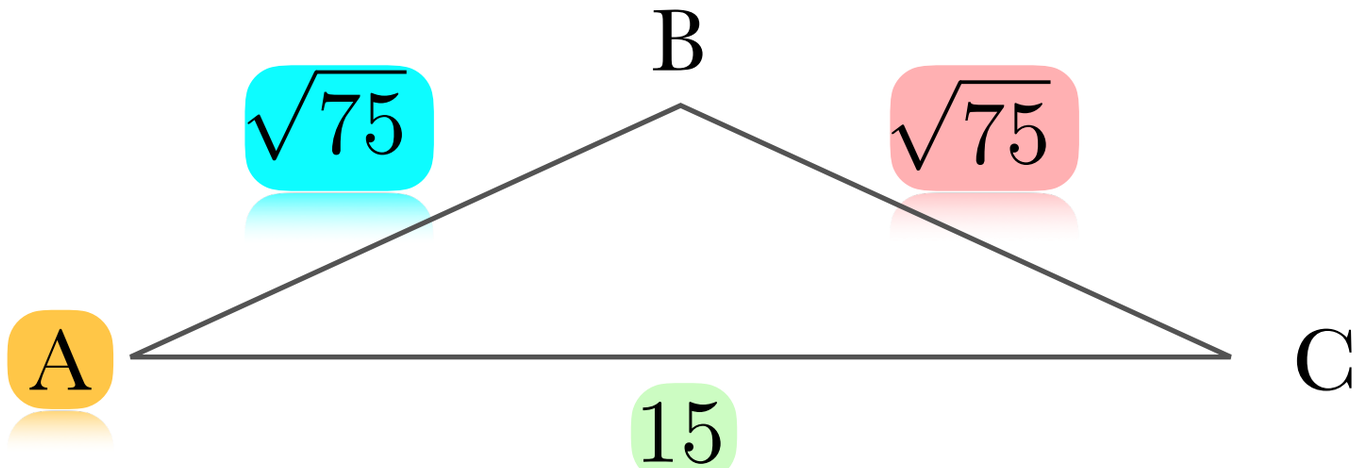

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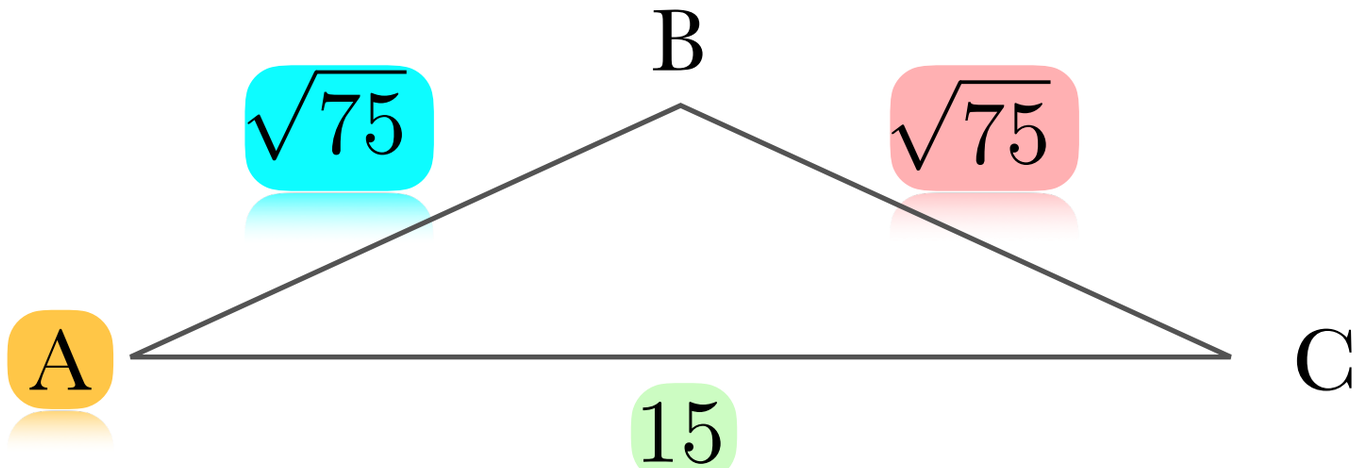


$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

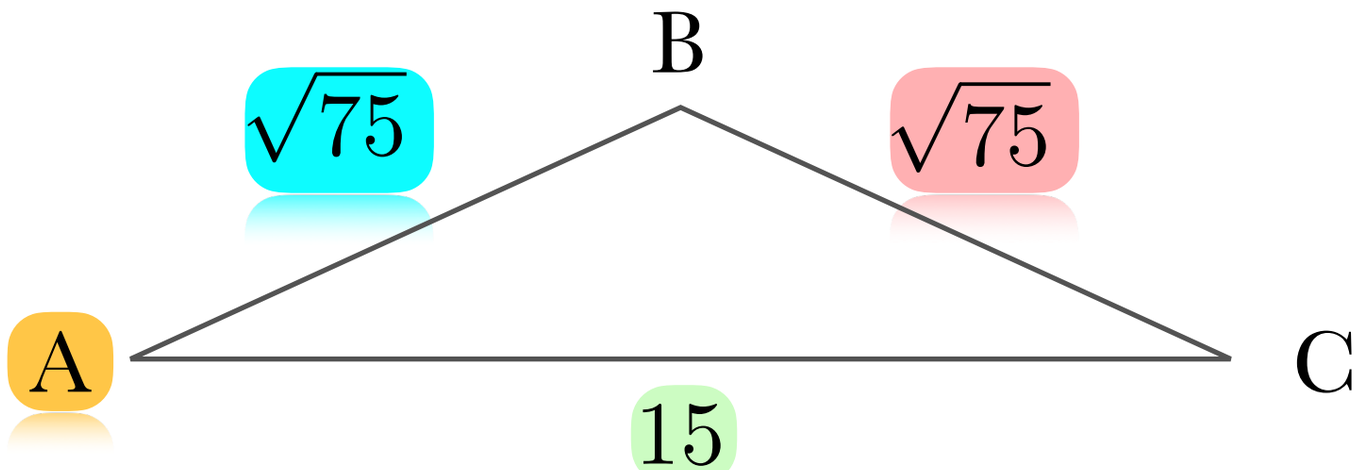
$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}}$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

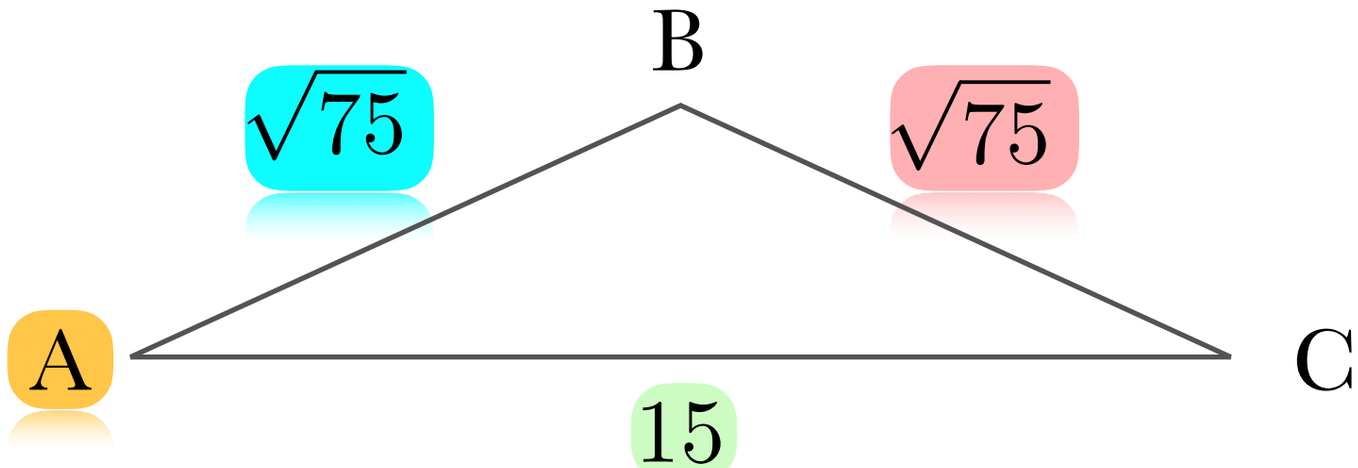
$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}}$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

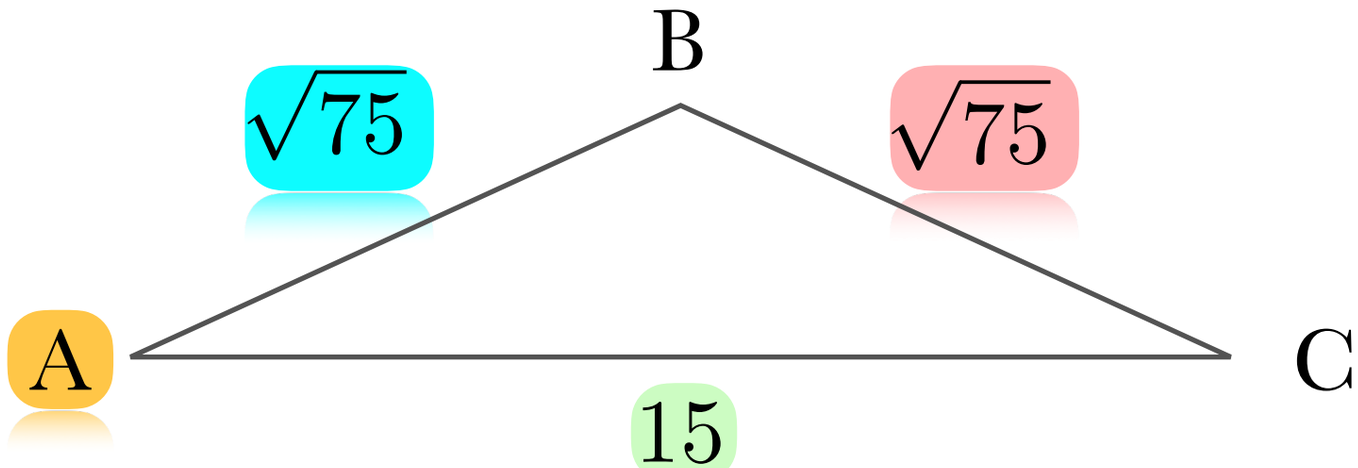
$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5}$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

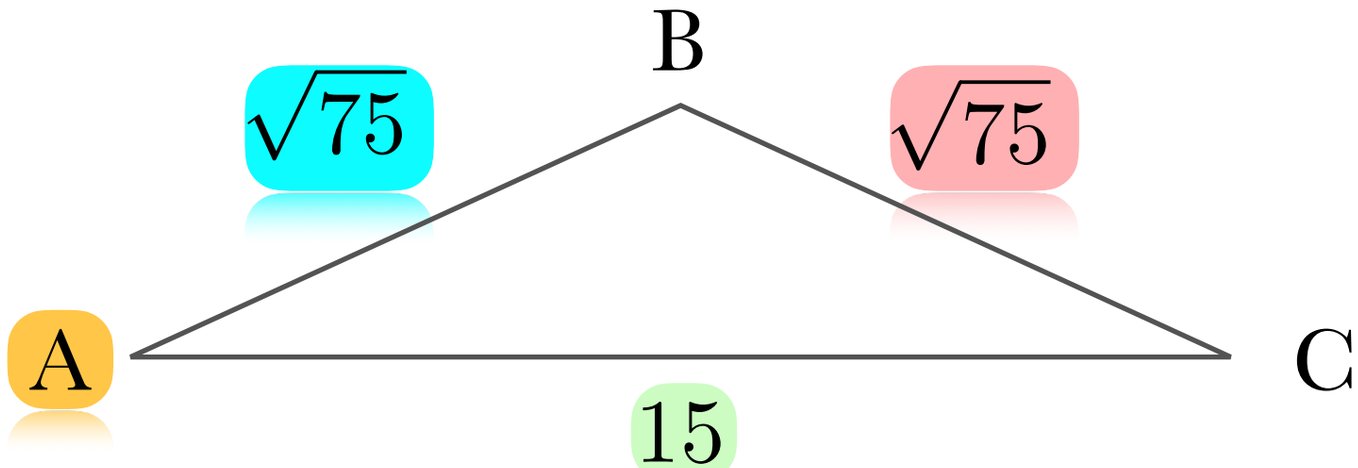
$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

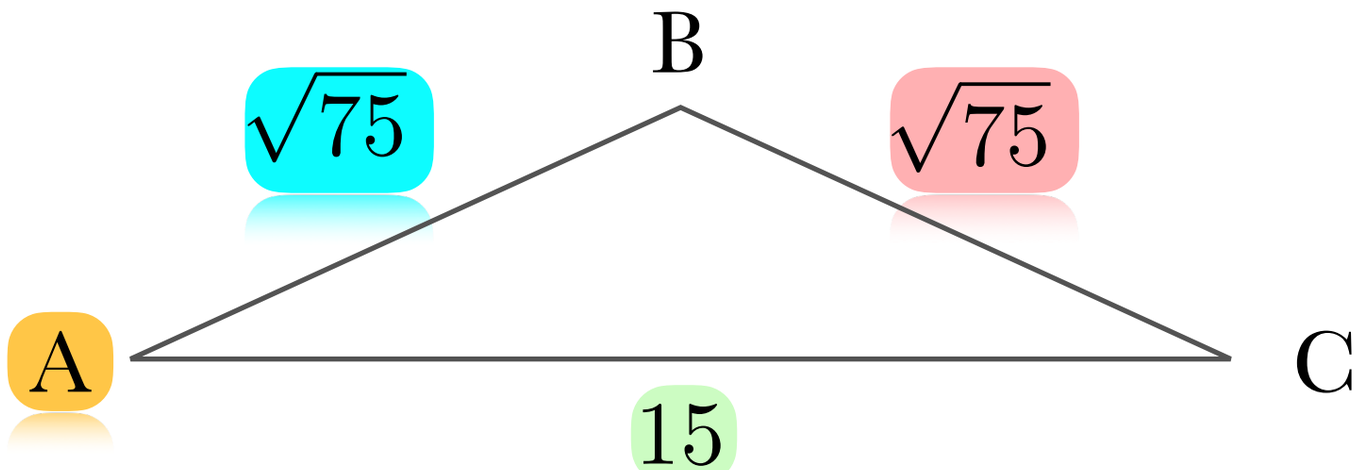
$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}}$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

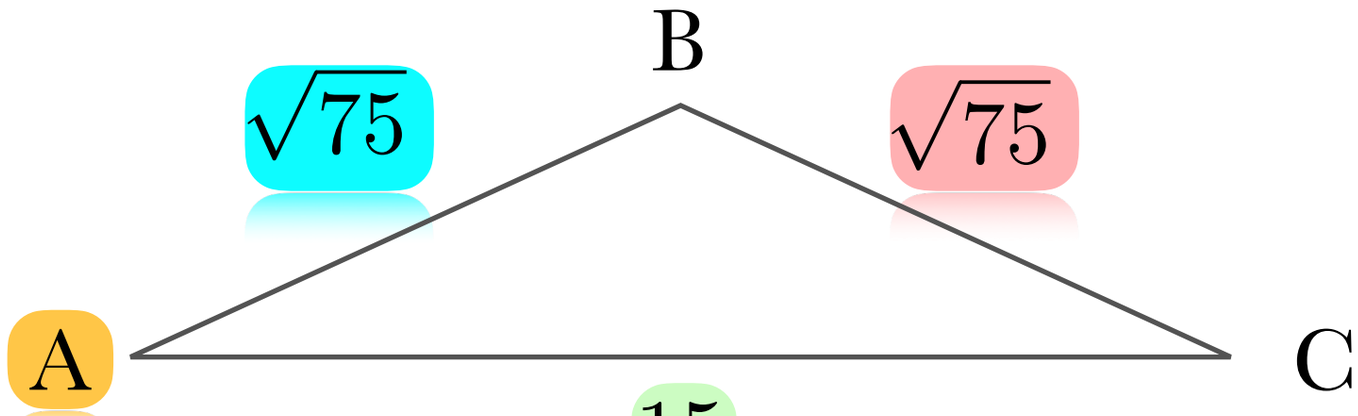
$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2}$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

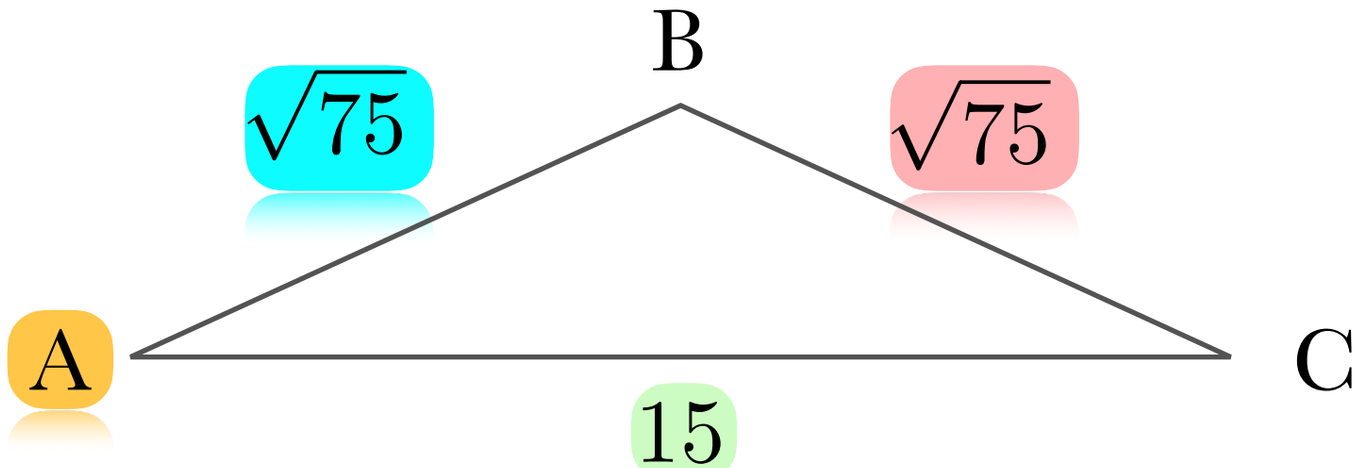
$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2} \qquad A = 30°$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

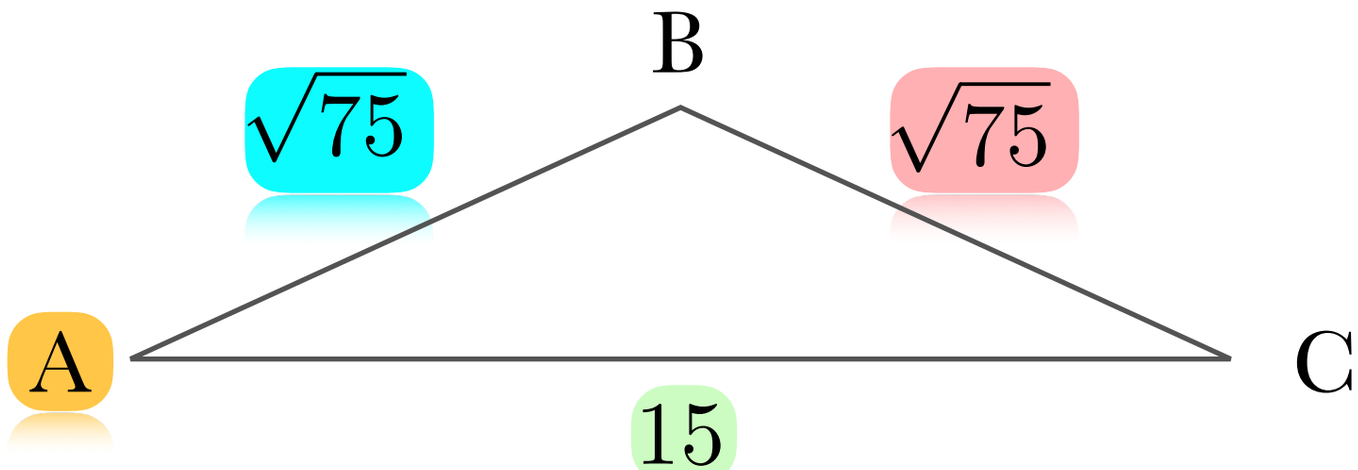
$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2} \qquad A = 30° \qquad C = 30°$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

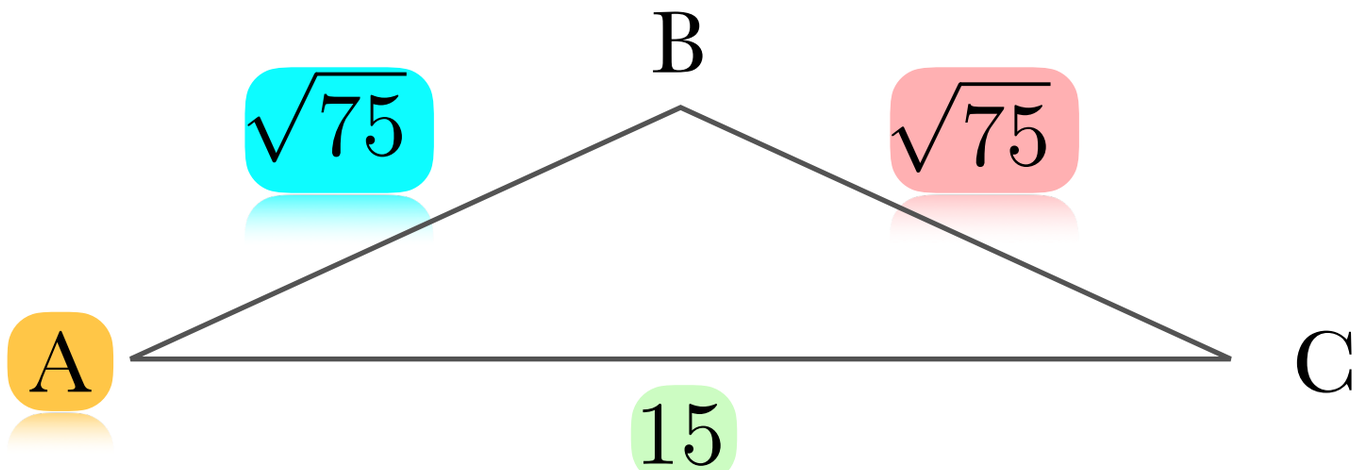
$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2}$$

$$A = 30° \qquad C = 30°$$

$$B = 180° - 30° - 30°$$

Exemple



$$(\sqrt{75})^2 = (\sqrt{75})^2 + 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$0 = 15^2 - 2 \times \sqrt{75} \times 15 \cos A$$

$$15^2 = 2 \times \sqrt{75} \times 15 \cos A$$

$$15 = 2 \times \sqrt{75} \cos A$$

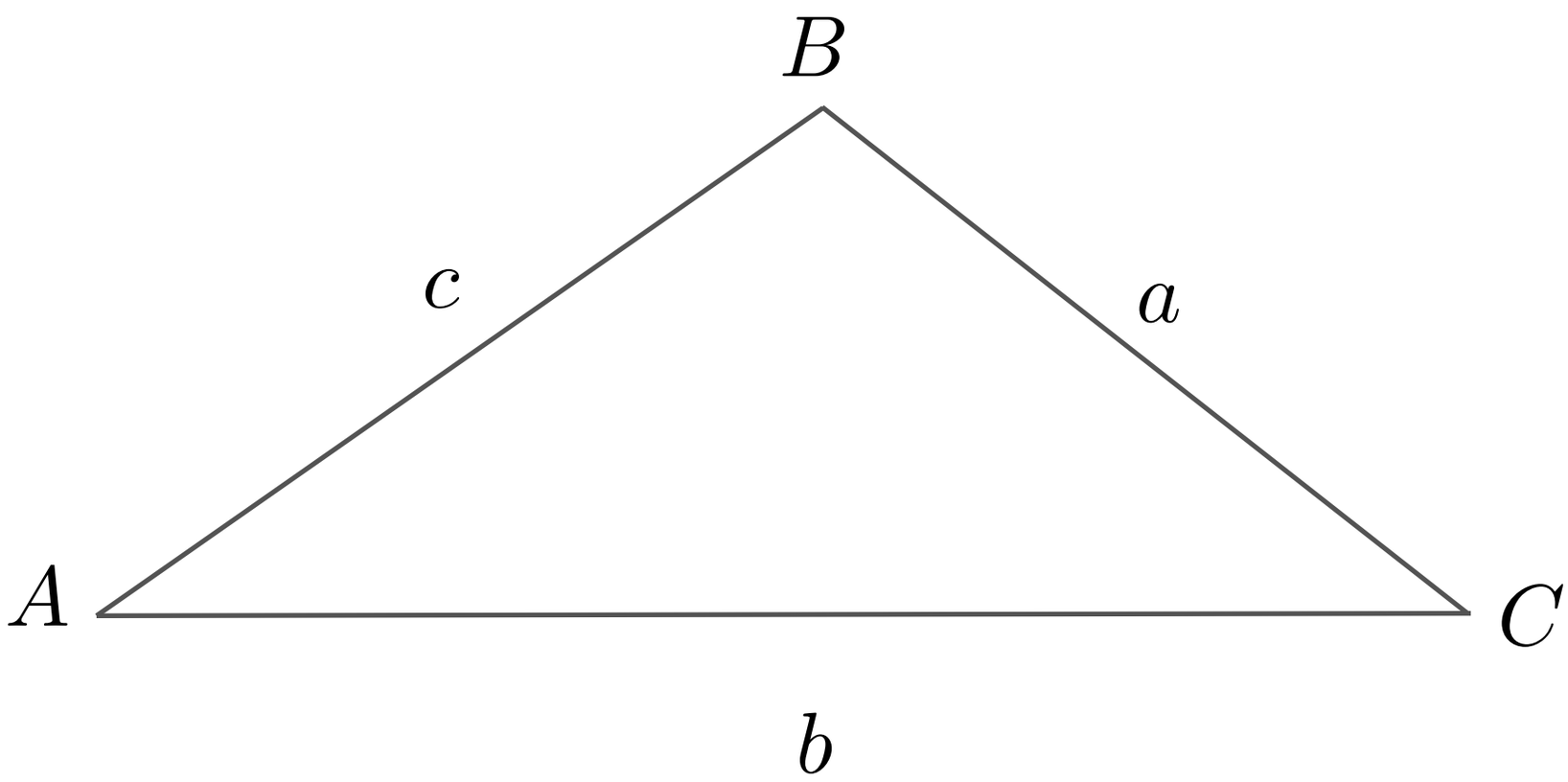
$$\cos A = \frac{15}{2 \times \sqrt{75}} = \frac{15}{2 \times \sqrt{3} \times \sqrt{25}} = \frac{15}{2 \times \sqrt{3} \times 5} = \frac{3}{2 \times \sqrt{3}}$$

$$= \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2}$$

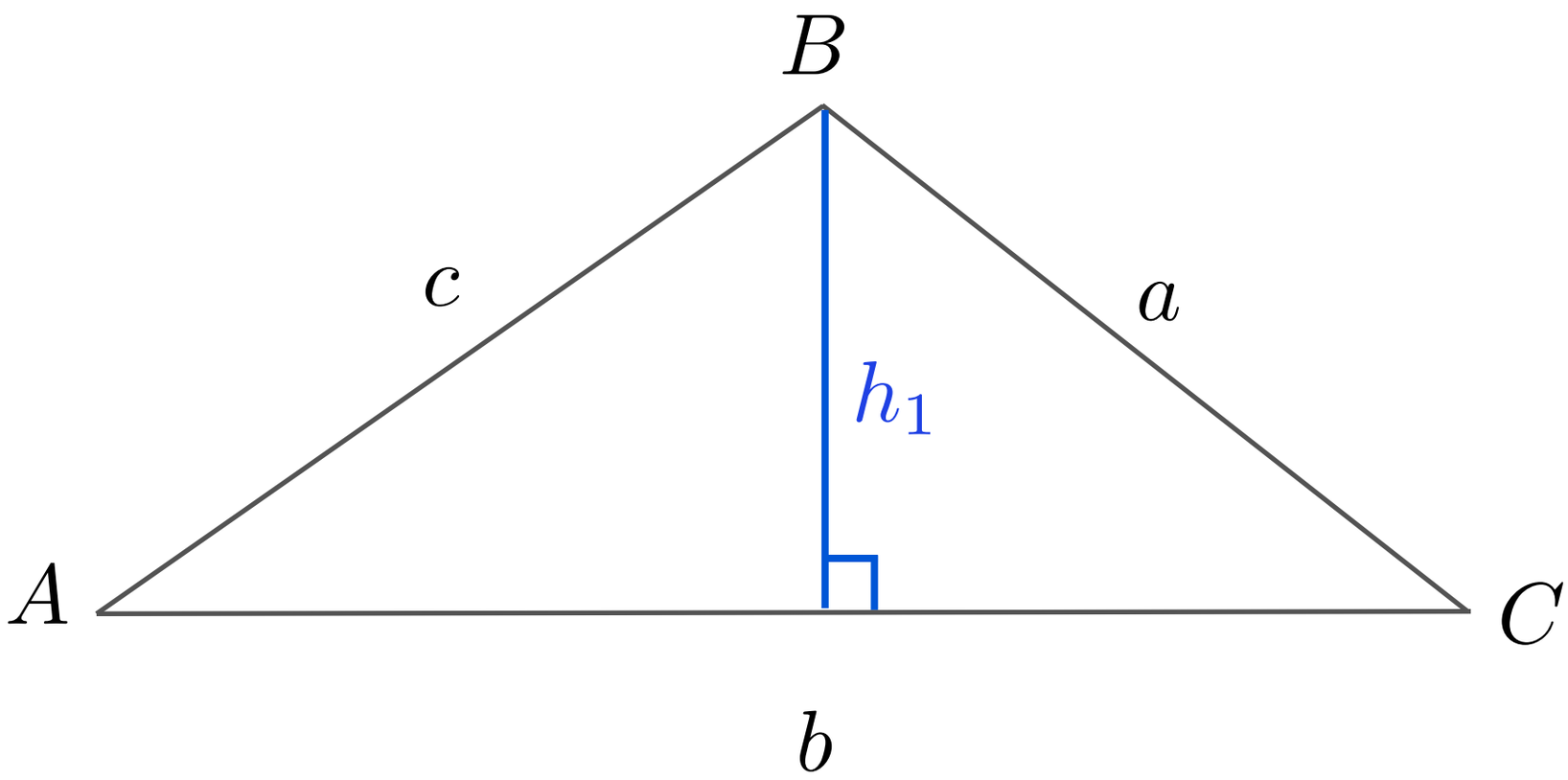
$$A = 30° \qquad C = 30°$$

$$B = 180° - 30° - 30° = 120°$$

Loi des sinus

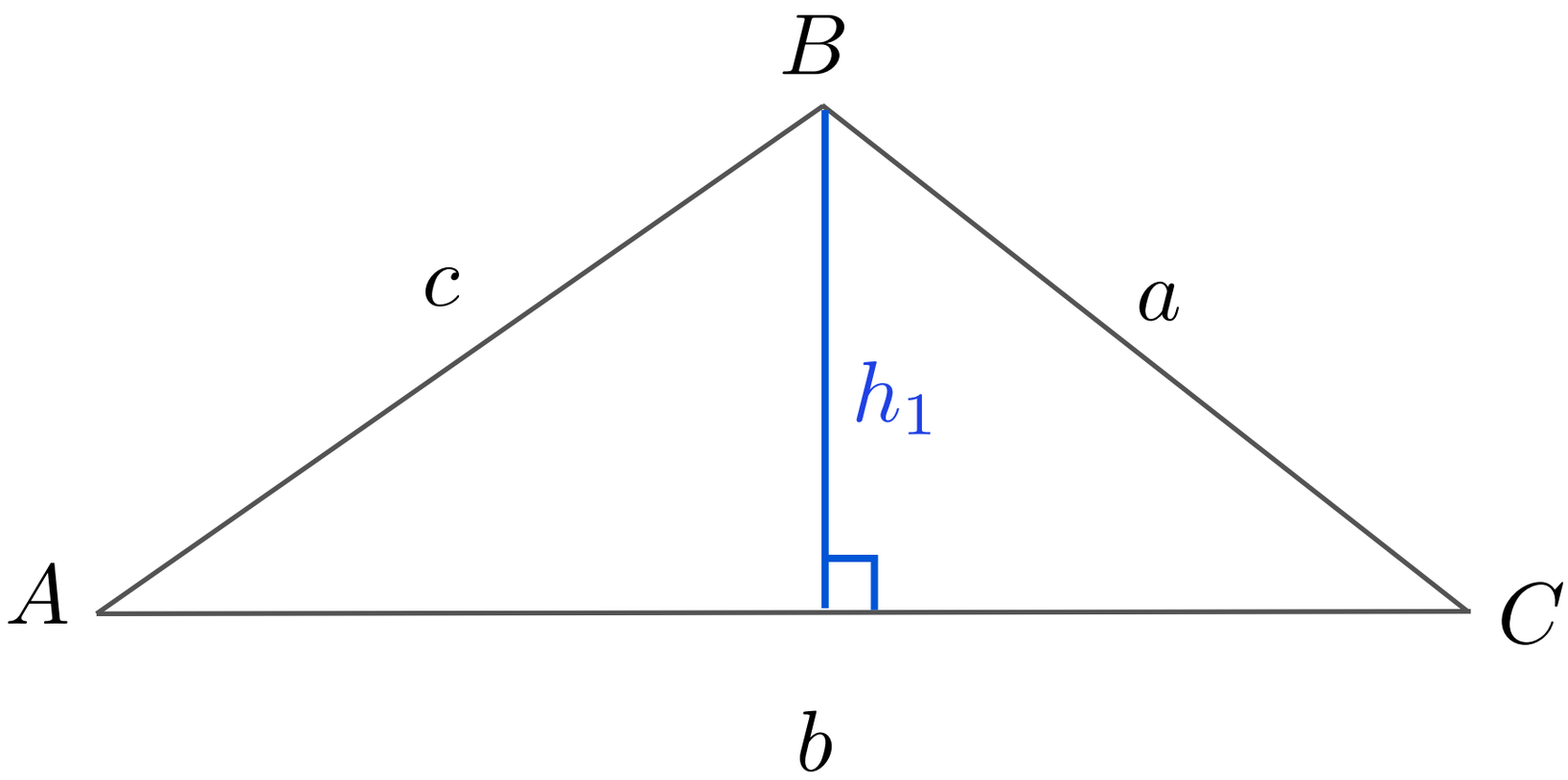


Loi des sinus



Loi des sinus

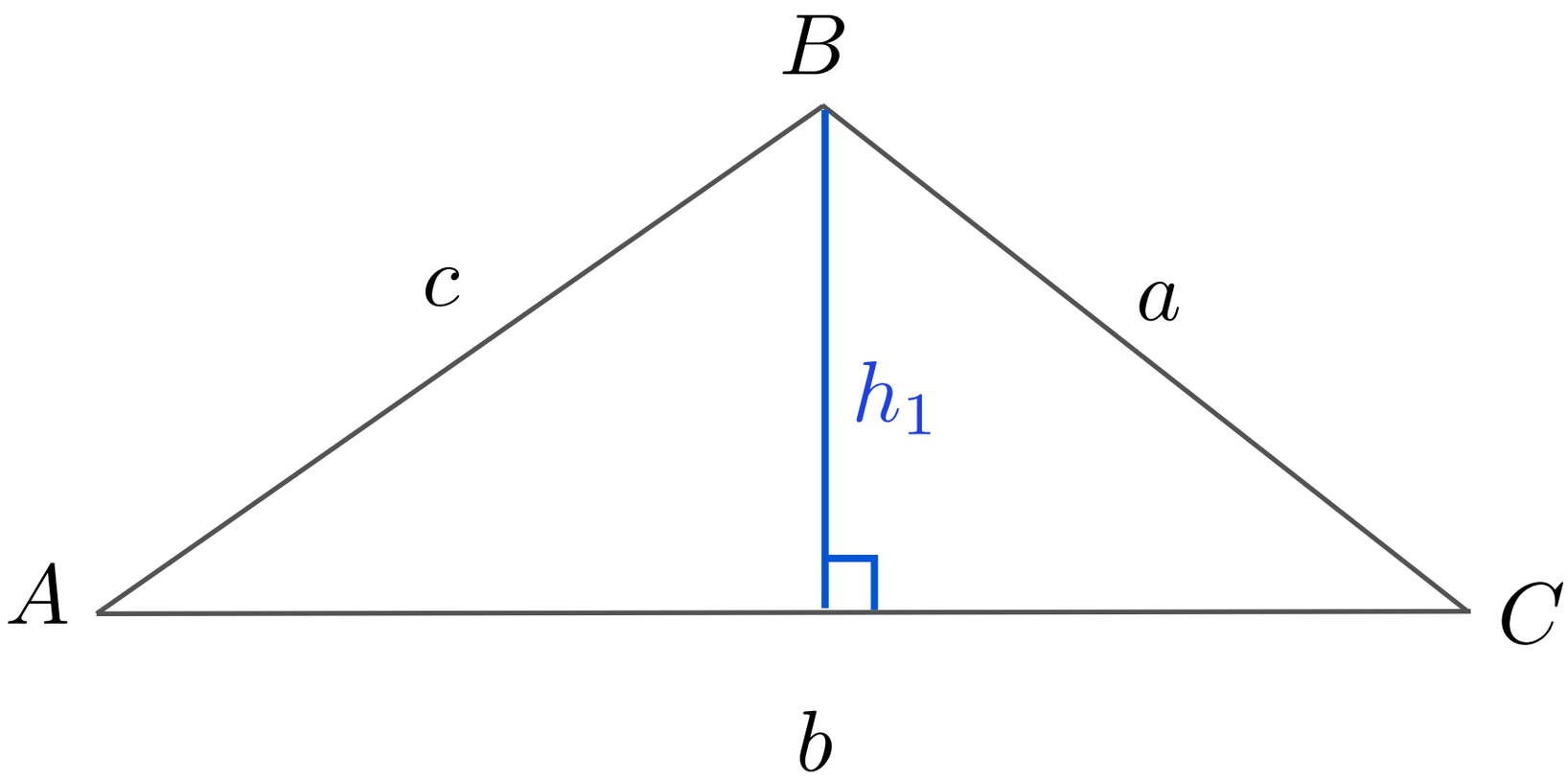
$$\sin A = \frac{h_1}{c}$$



Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$\sin C = \frac{h_1}{a}$$

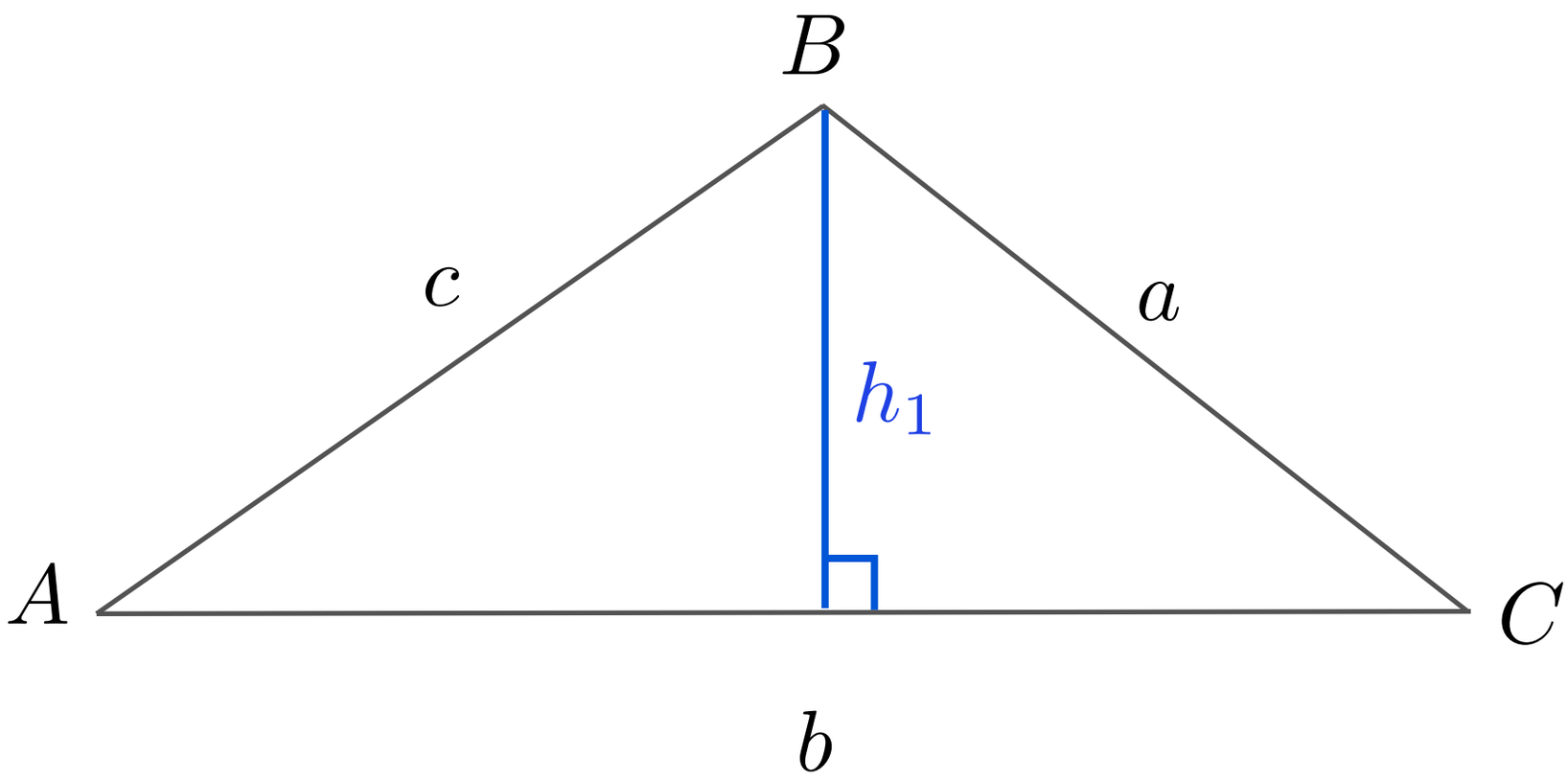


Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$



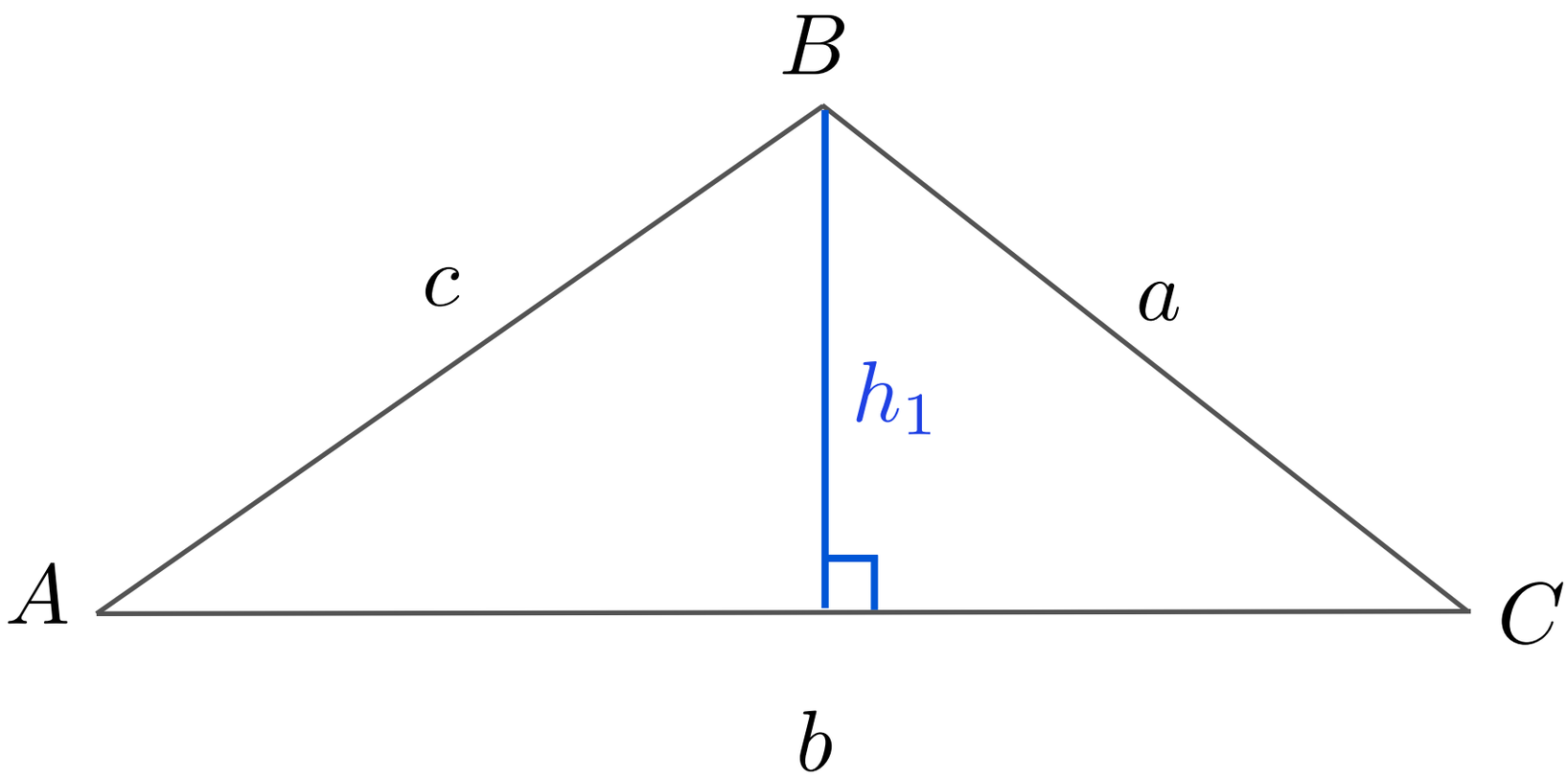
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$

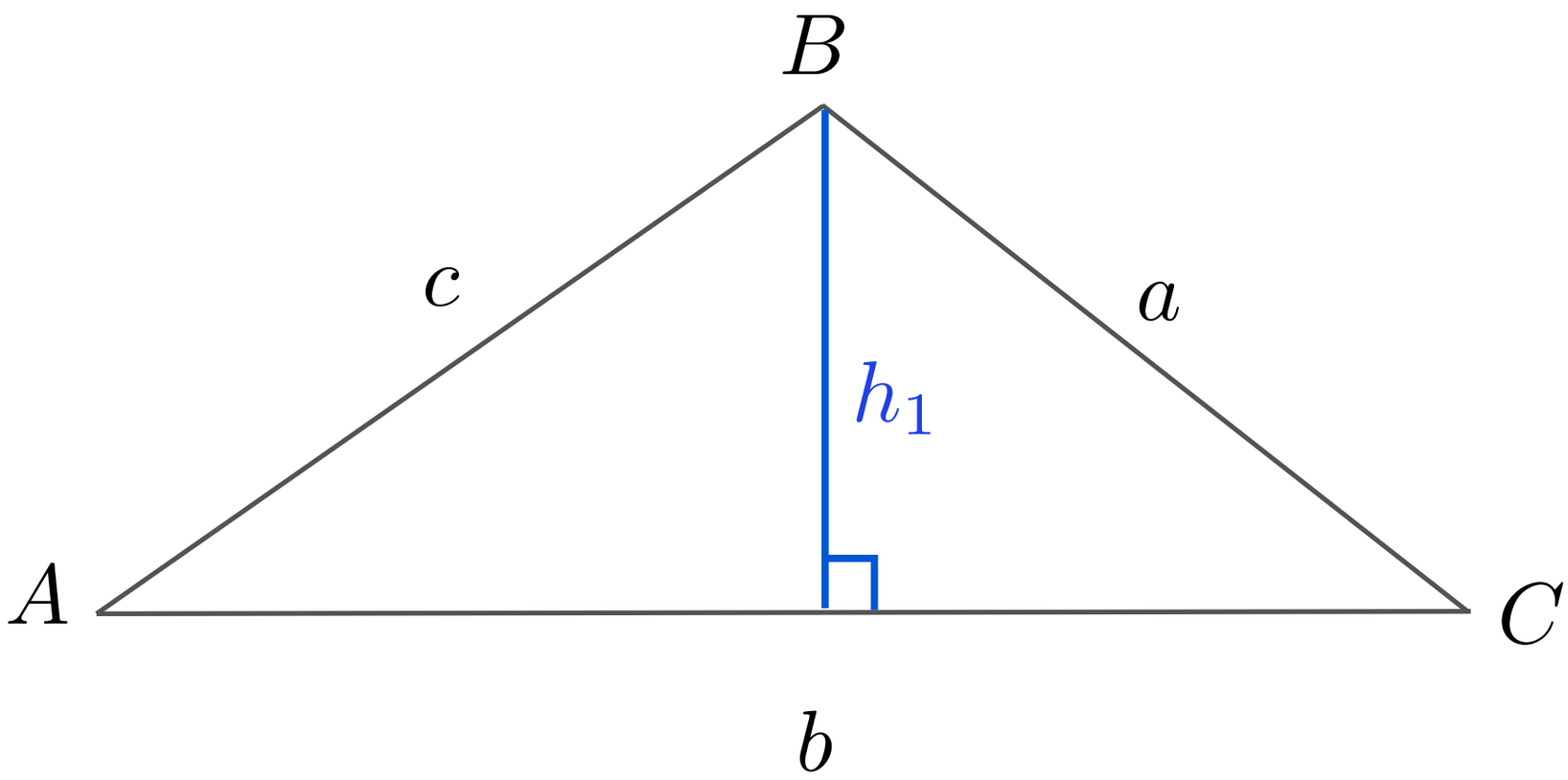
$$h_1 = a \sin C$$



Loi des sinus

$$\sin A = \frac{h_1}{c}$$
$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$
$$h_1 = a \sin C$$



$$c \sin A = a \sin C$$

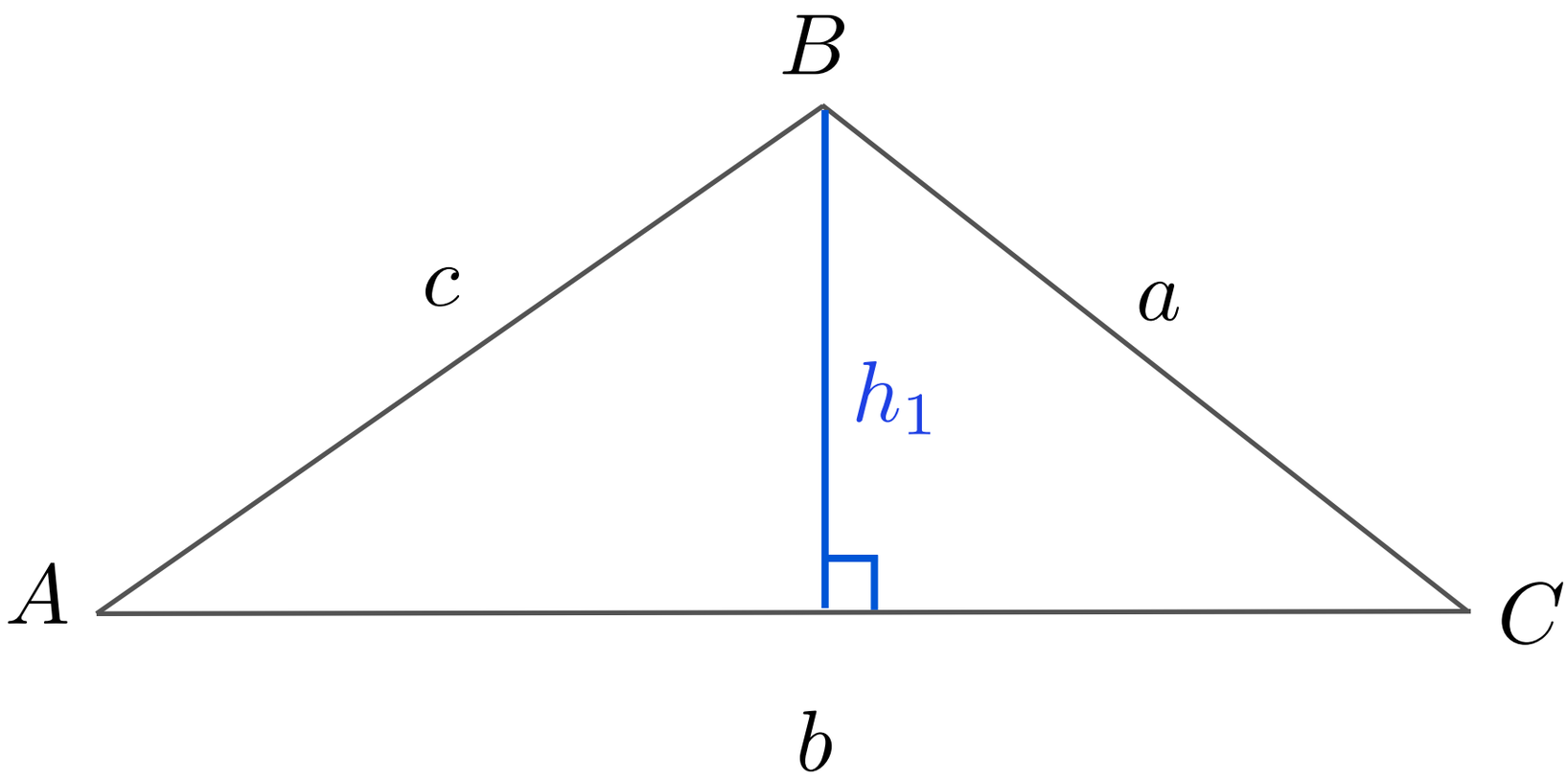
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$



$$c \sin A = a \sin C$$

Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$

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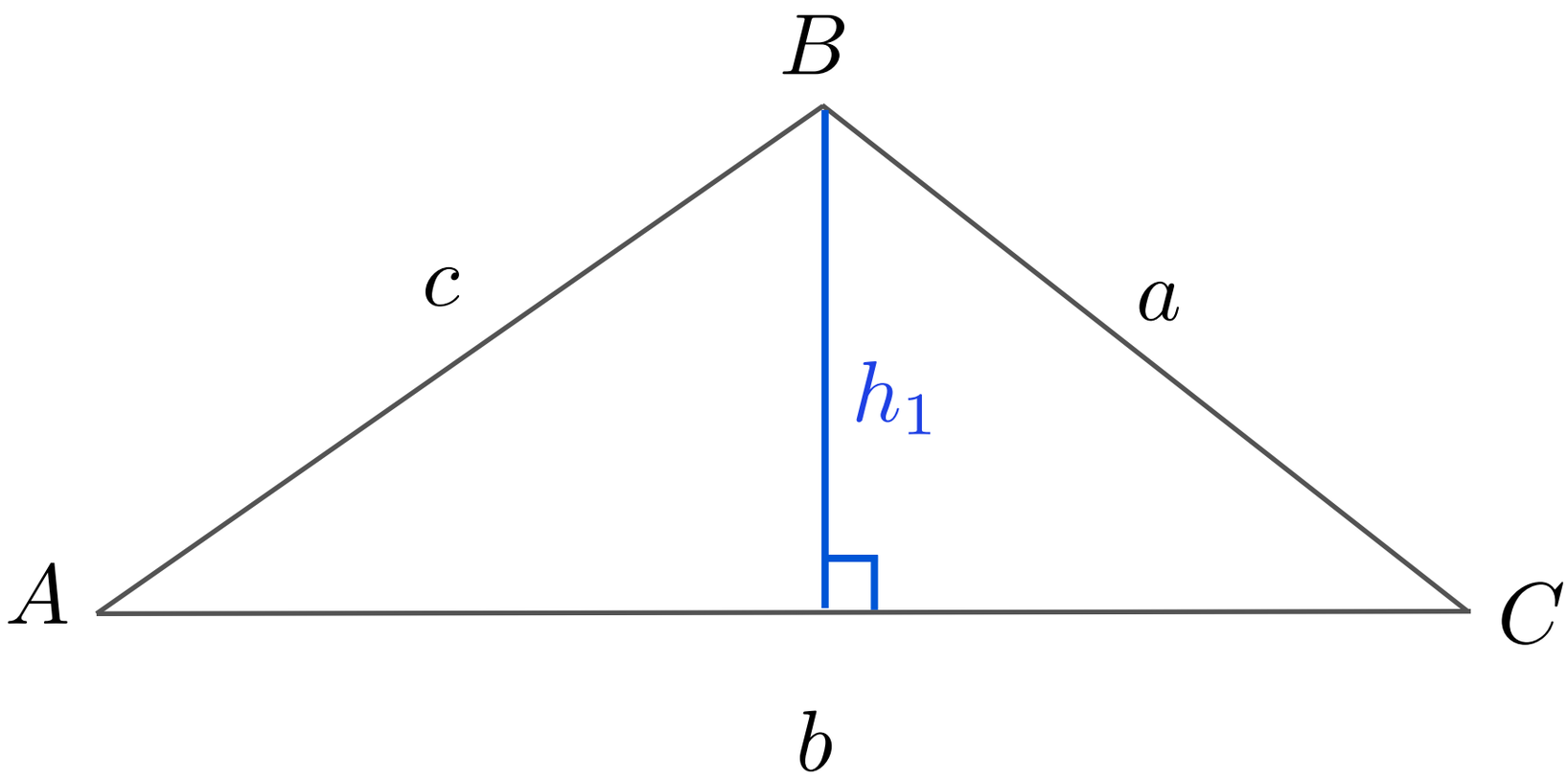

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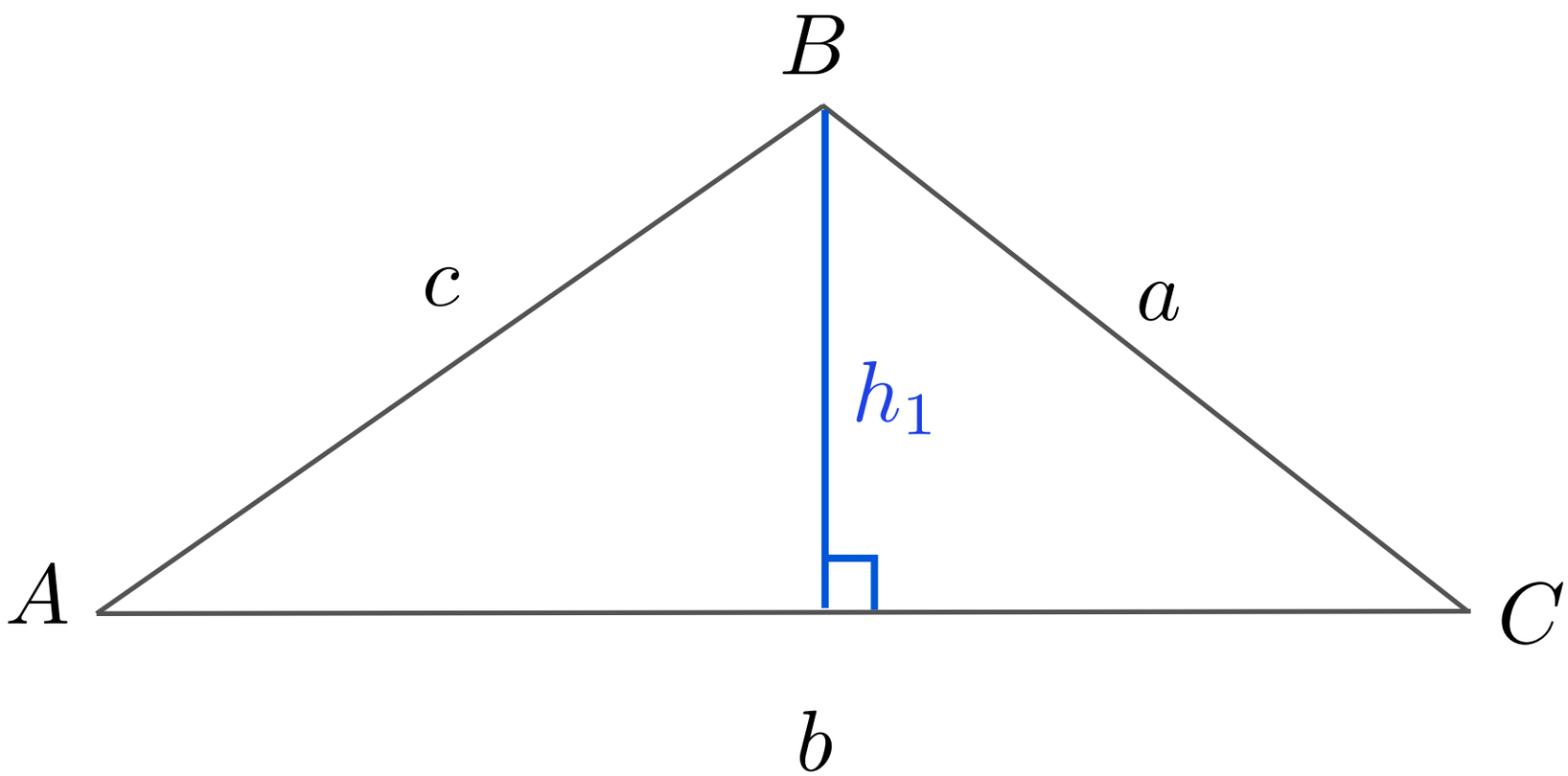
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$



$$c \sin A = a \sin C$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

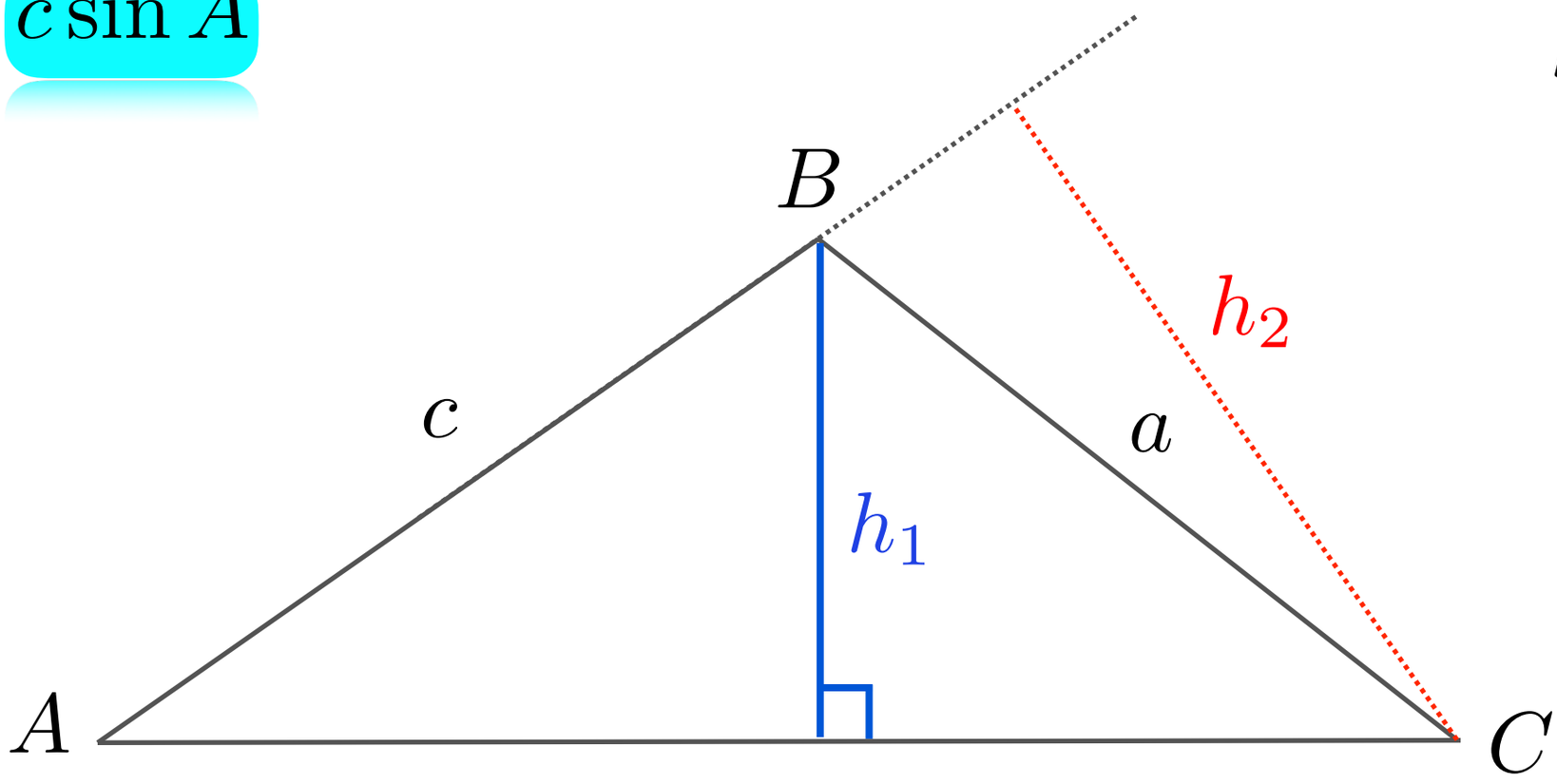
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$



$$c \sin A = a \sin C$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

Loi des sinus

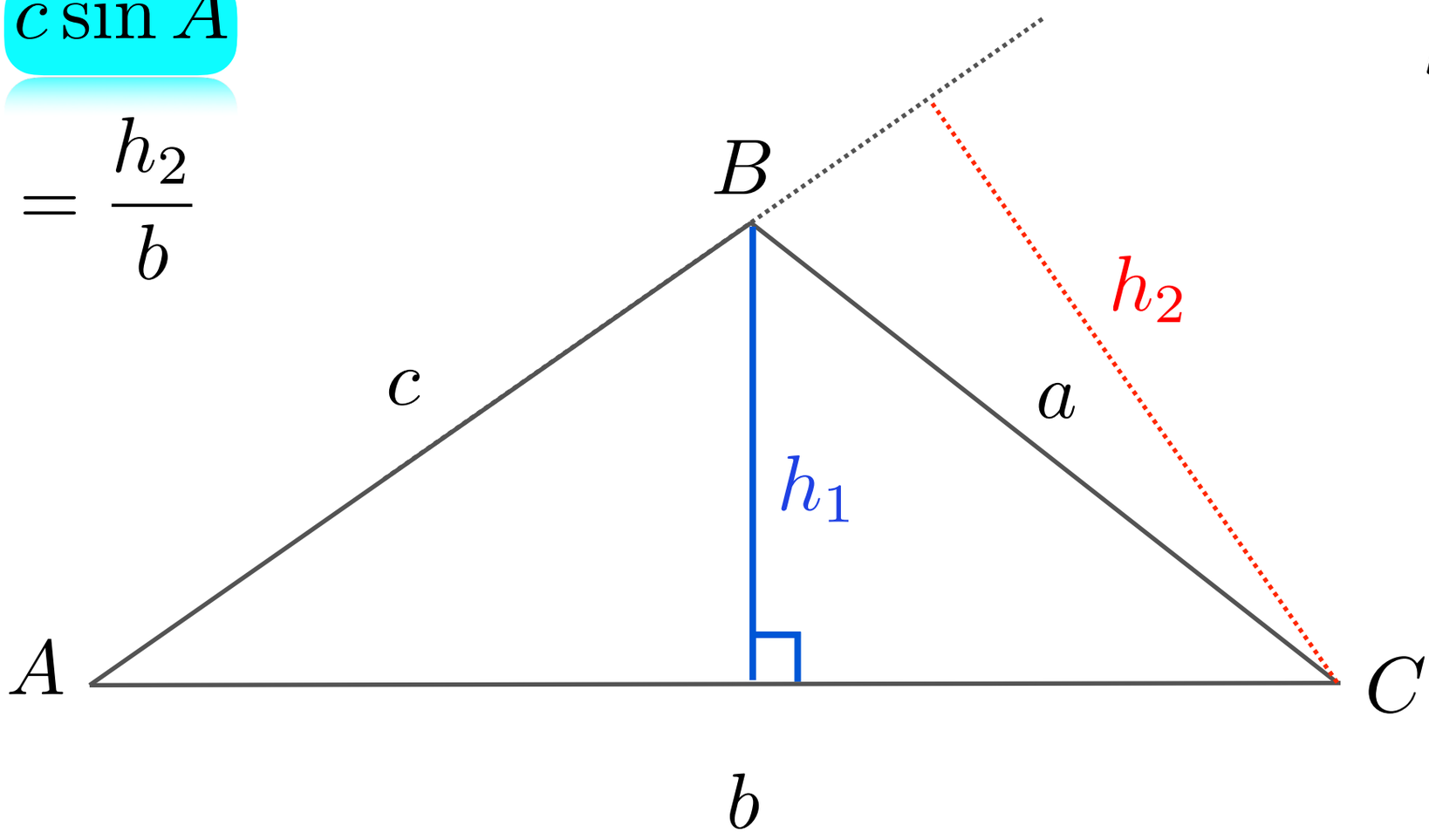
$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin A = \frac{h_2}{b}$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$



$$c \sin A = a \sin C$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

Loi des sinus

$$\sin A = \frac{h_1}{c}$$

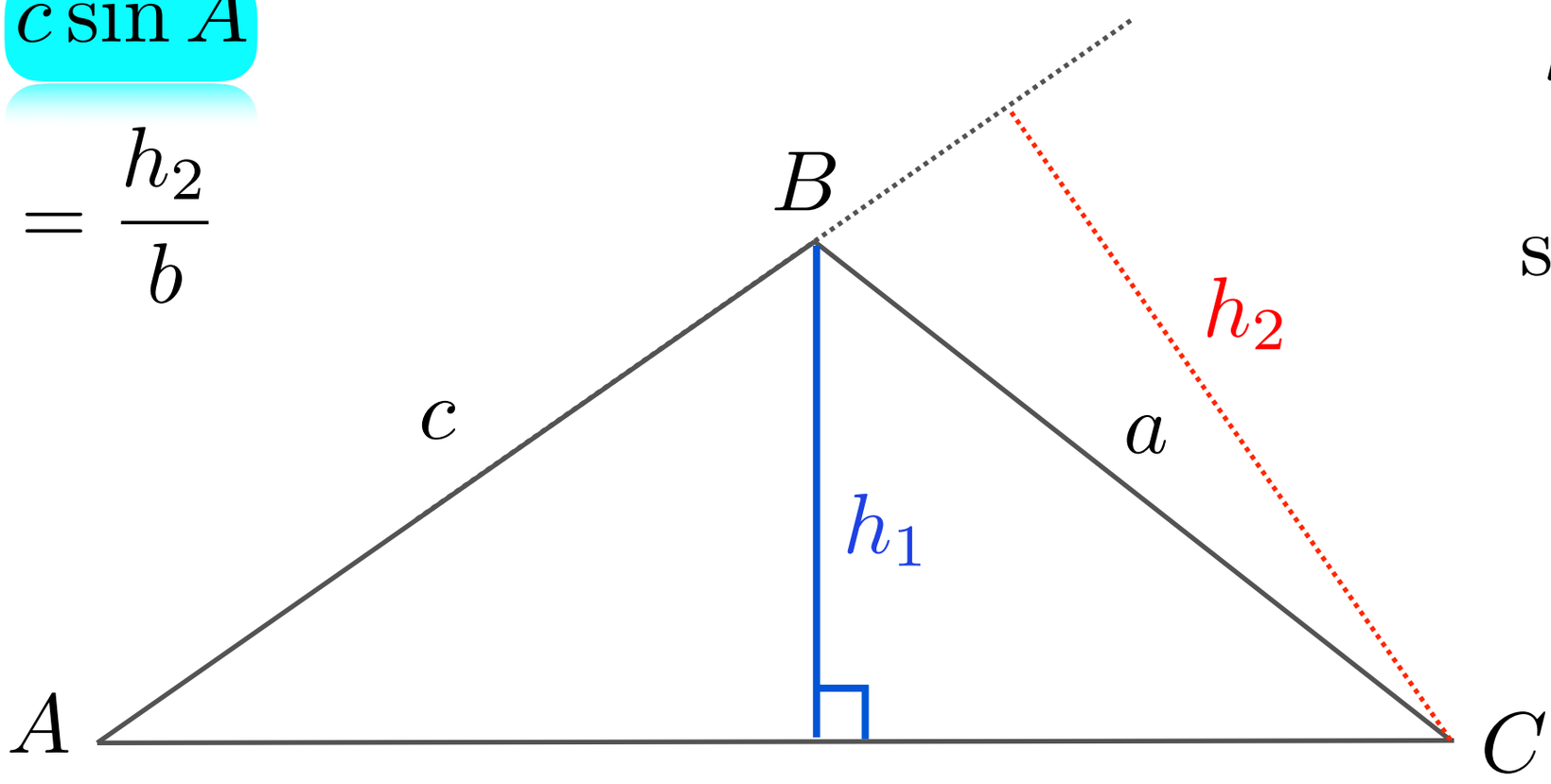
$$h_1 = c \sin A$$

$$\sin A = \frac{h_2}{b}$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$

$$\sin B = \frac{h_2}{a}$$



$$c \sin A = a \sin C$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

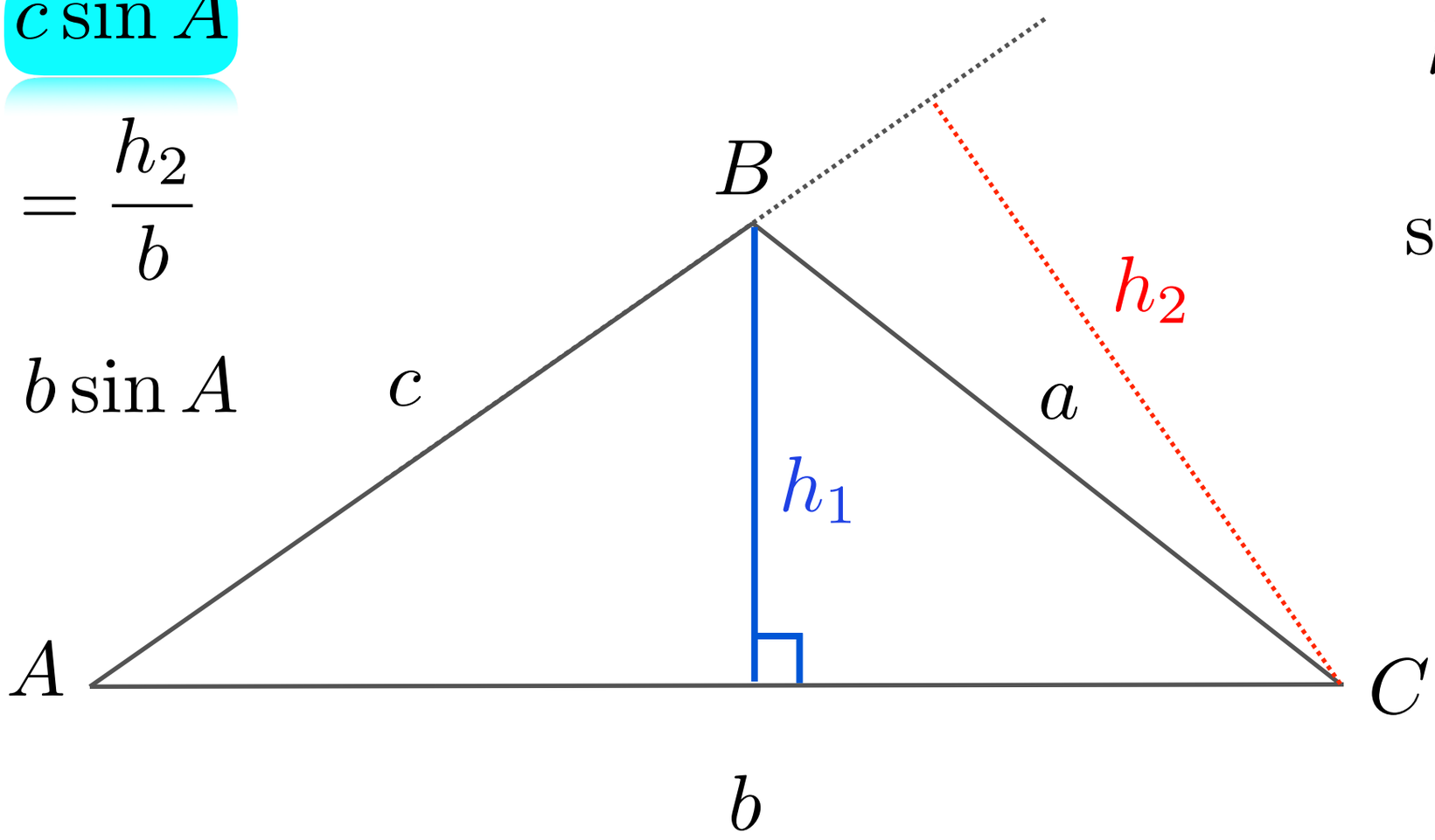
$$\sin A = \frac{h_2}{b}$$

$$h_2 = b \sin A$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$

$$\sin B = \frac{h_2}{a}$$



$$c \sin A = a \sin C$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin A = \frac{h_2}{b}$$

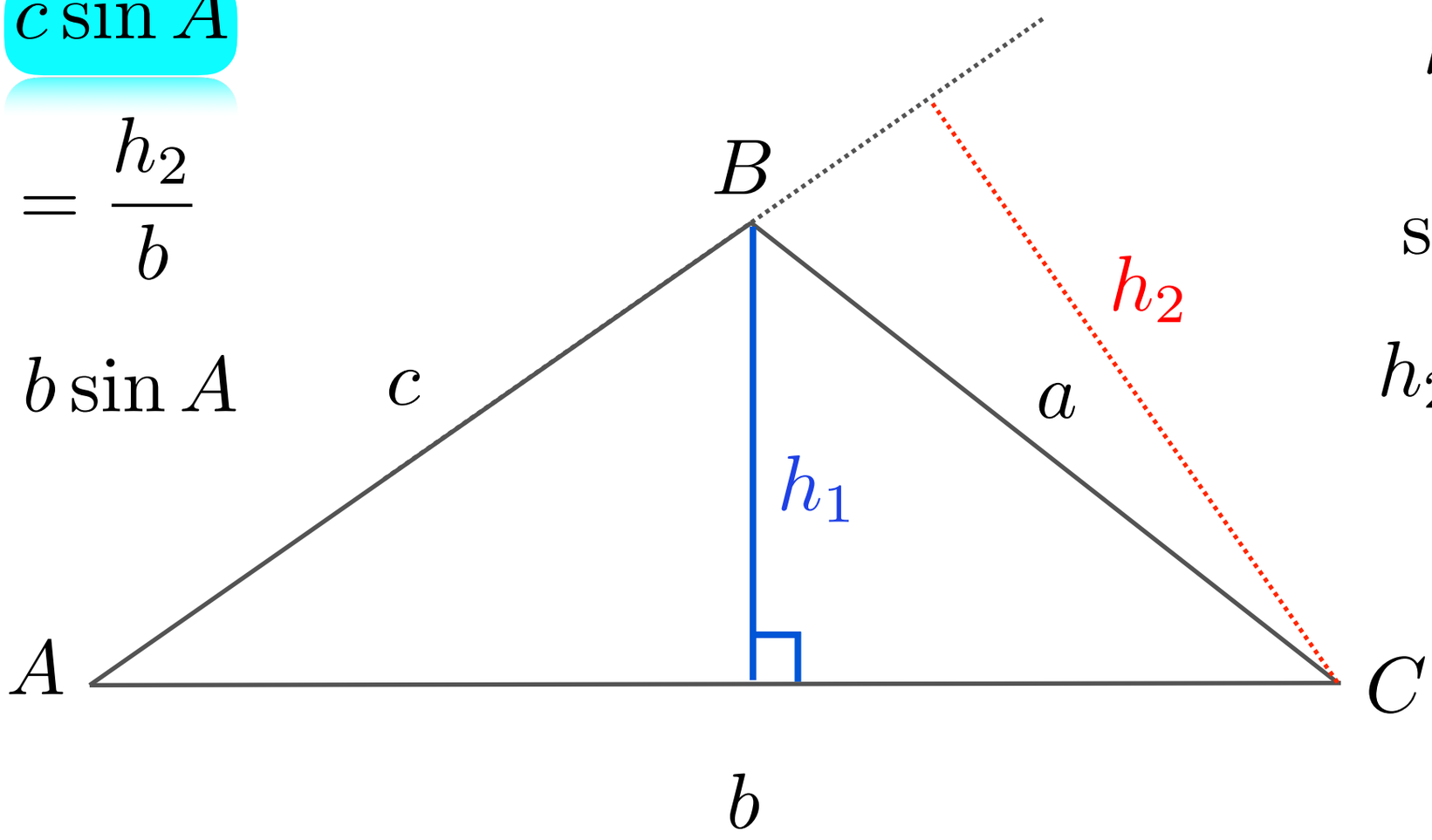
$$h_2 = b \sin A$$

$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$

$$\sin B = \frac{h_2}{a}$$

$$h_2 = a \sin B$$



$$c \sin A = a \sin C$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin C = \frac{h_1}{a}$$

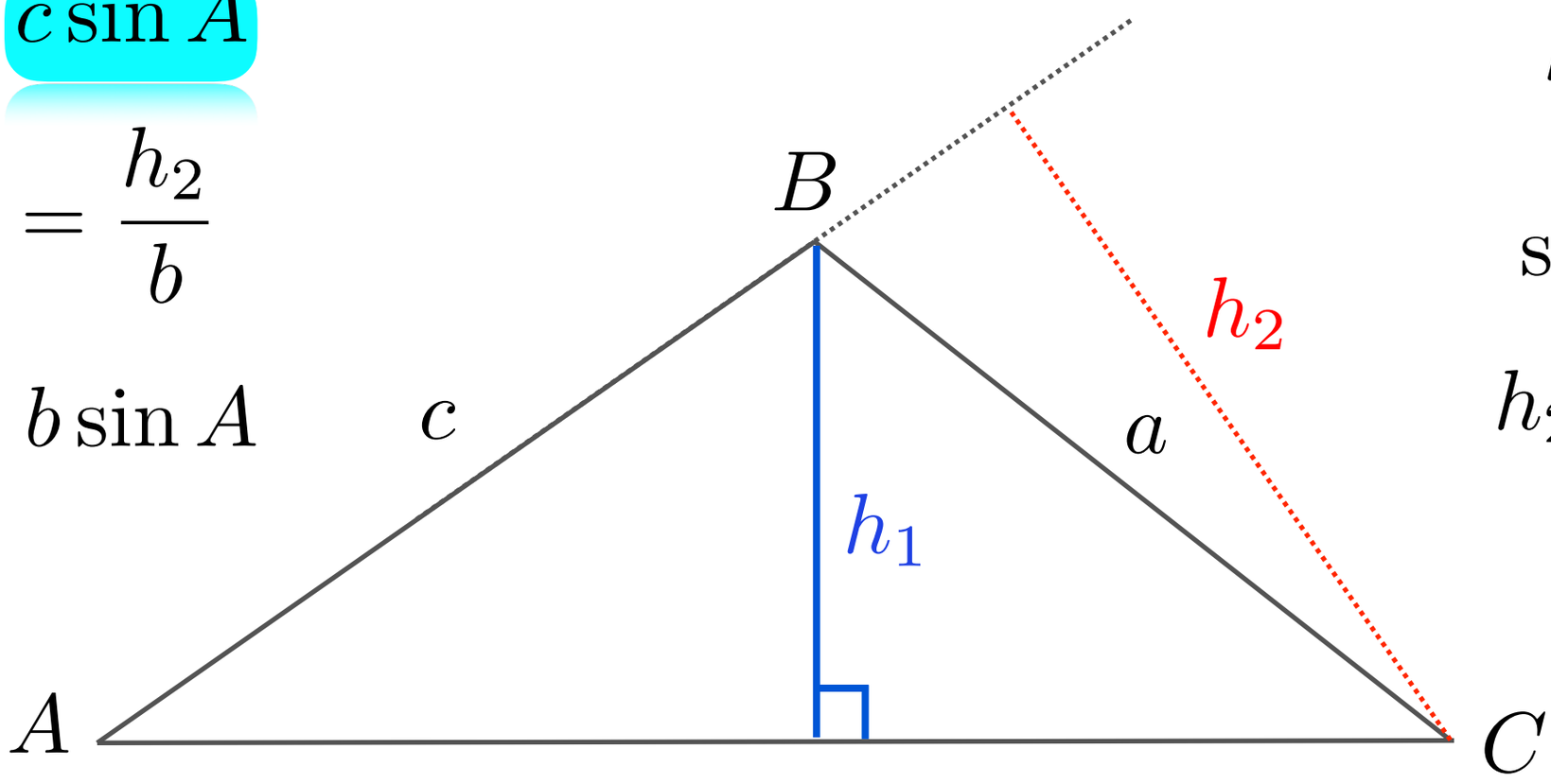
$$h_1 = a \sin C$$

$$\sin A = \frac{h_2}{b}$$

$$h_2 = b \sin A$$

$$\sin B = \frac{h_2}{a}$$

$$h_2 = a \sin B$$



$$c \sin A = a \sin C$$

$$a \sin B = b \sin A$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

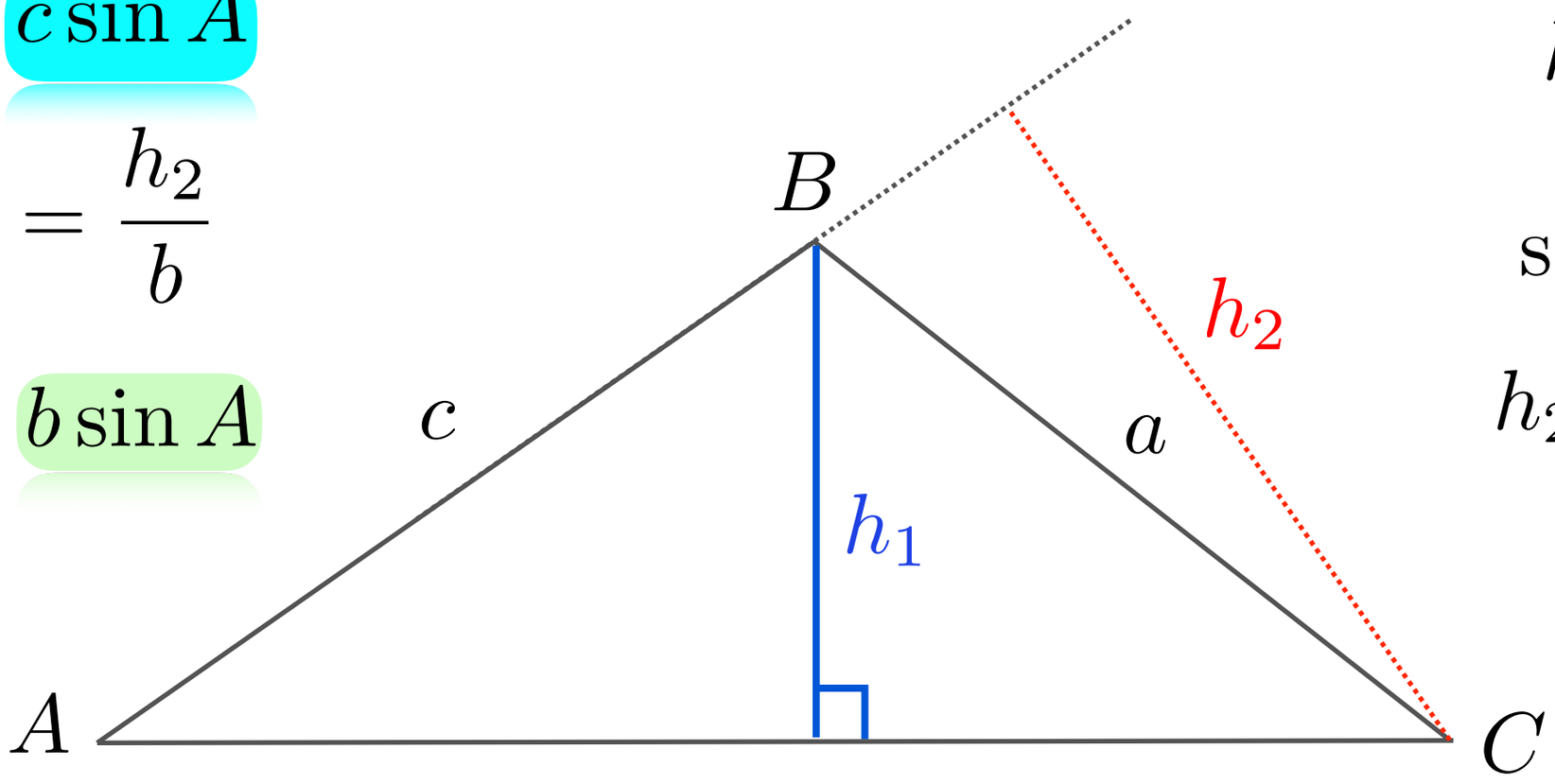
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin A = \frac{h_2}{b}$$

$$h_2 = b \sin A$$



$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$

$$\sin B = \frac{h_2}{a}$$

$$h_2 = a \sin B$$

$$c \sin A = a \sin C$$

$$a \sin B = b \sin A$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

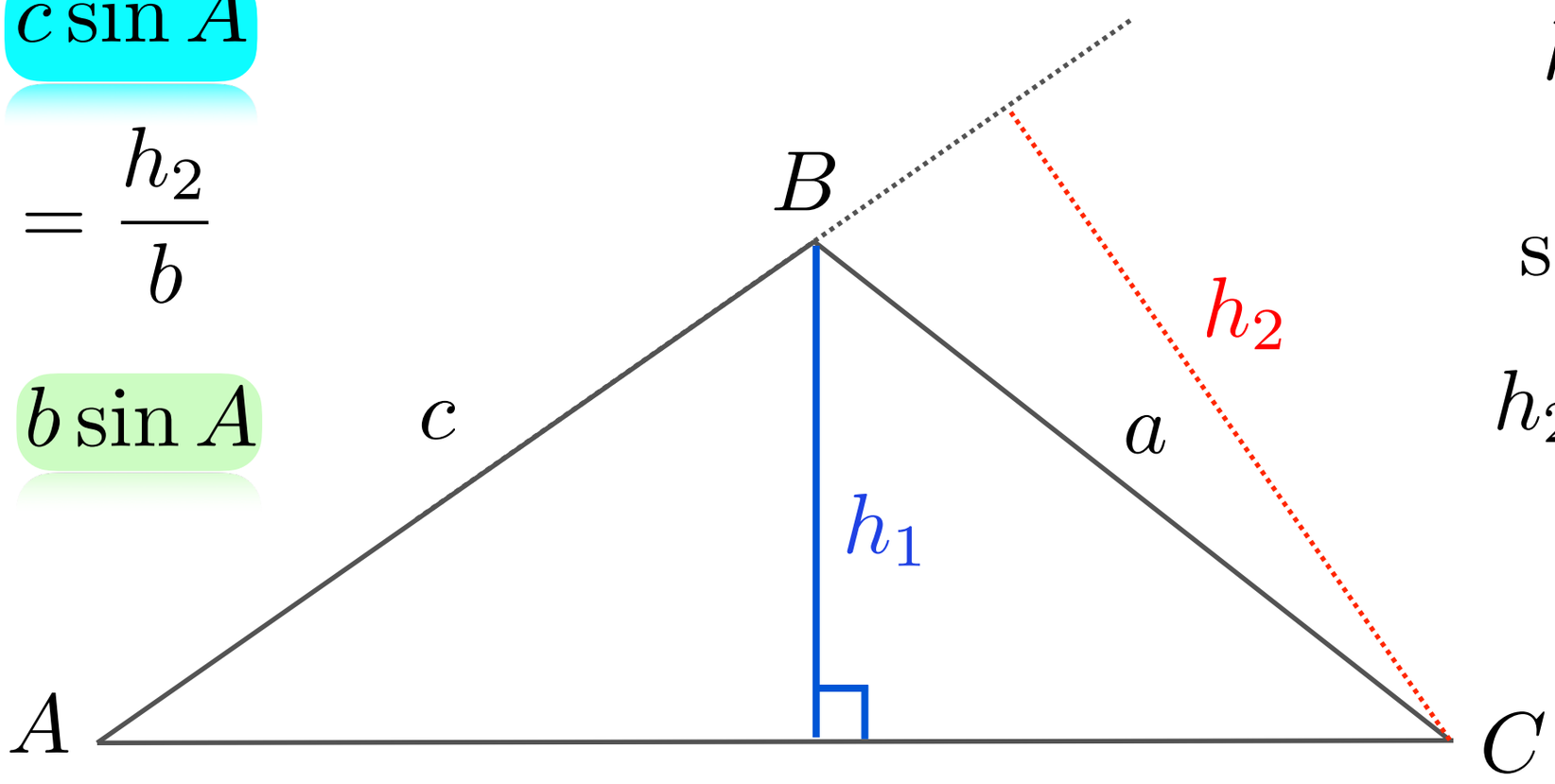
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin A = \frac{h_2}{b}$$

$$h_2 = b \sin A$$



$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$

$$\sin B = \frac{h_2}{a}$$

$$h_2 = a \sin B$$

$$c \sin A = a \sin C$$

$$a \sin B = b \sin A$$

$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

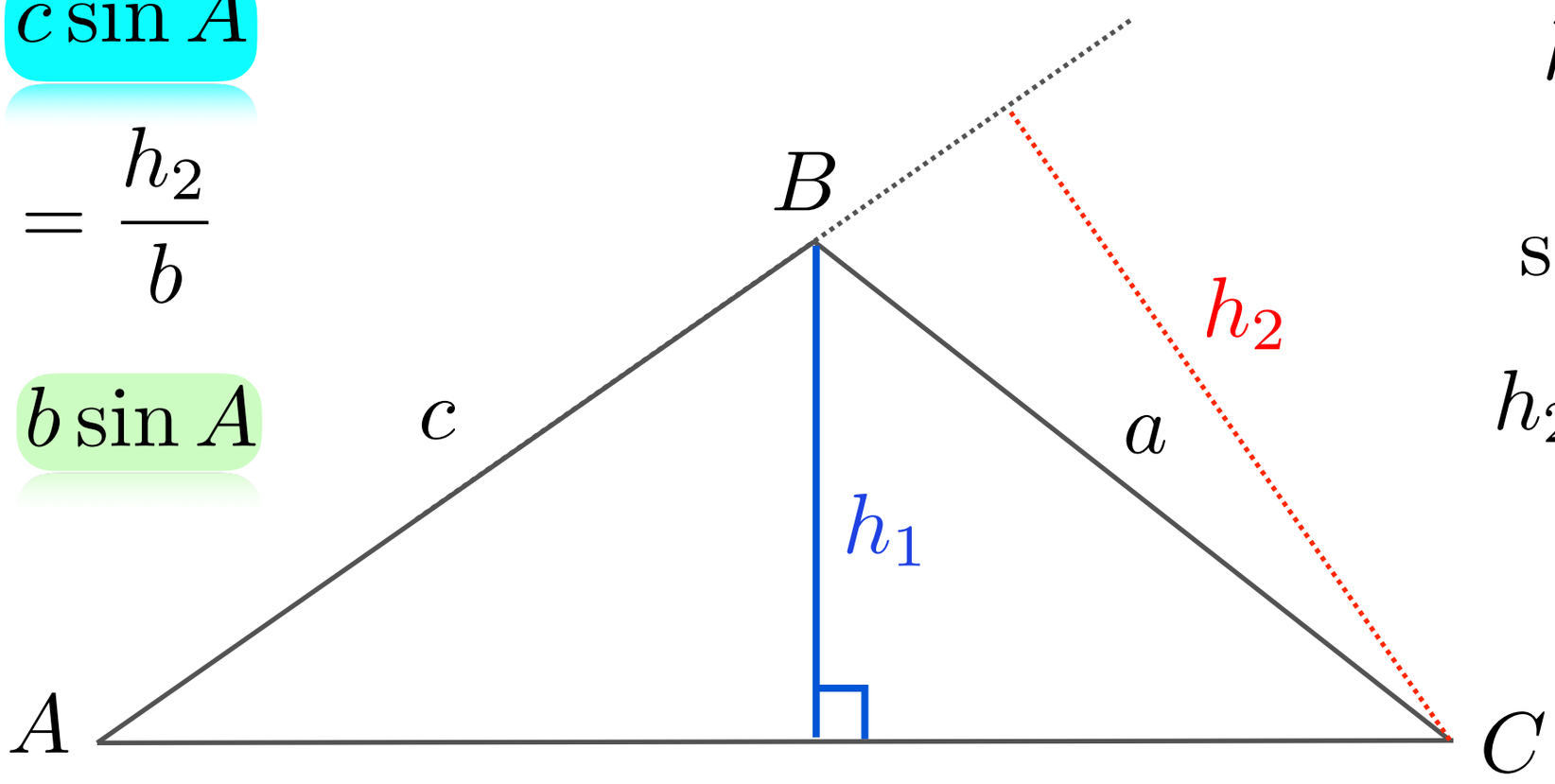
Loi des sinus

$$\sin A = \frac{h_1}{c}$$

$$h_1 = c \sin A$$

$$\sin A = \frac{h_2}{b}$$

$$h_2 = b \sin A$$



$$\sin C = \frac{h_1}{a}$$

$$h_1 = a \sin C$$

$$\sin B = \frac{h_2}{a}$$

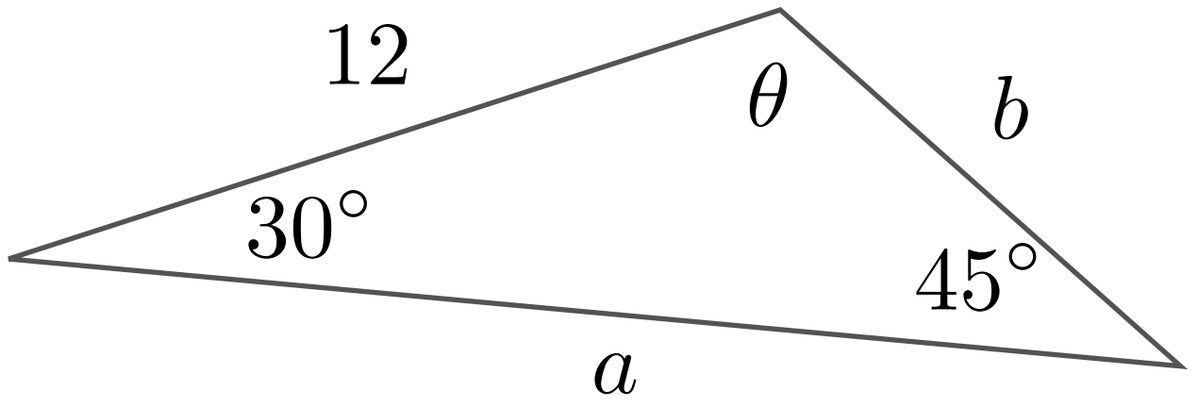
$$h_2 = a \sin B$$

$$c \sin A = a \sin C$$

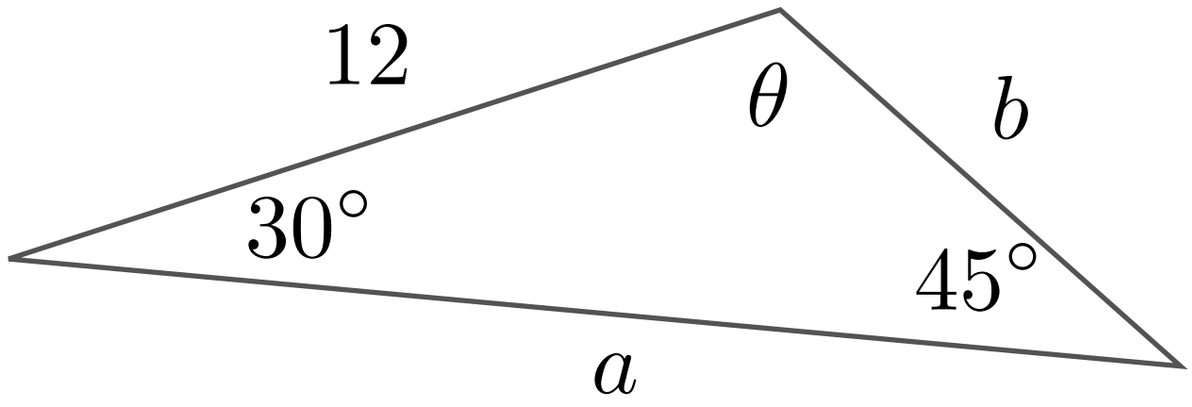
$$a \sin B = b \sin A$$

$$\frac{\sin A}{a} = \frac{\sin C}{c} = \frac{\sin B}{B}$$

Exemple

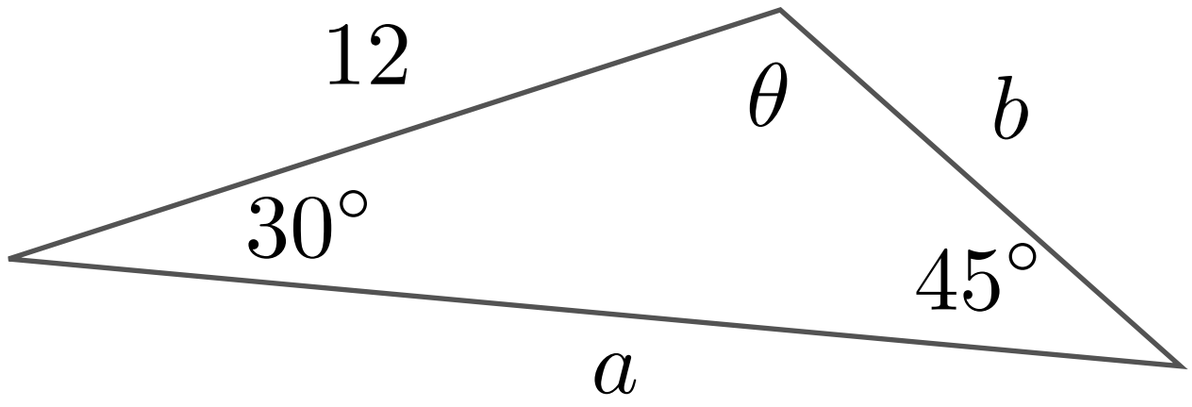


Exemple



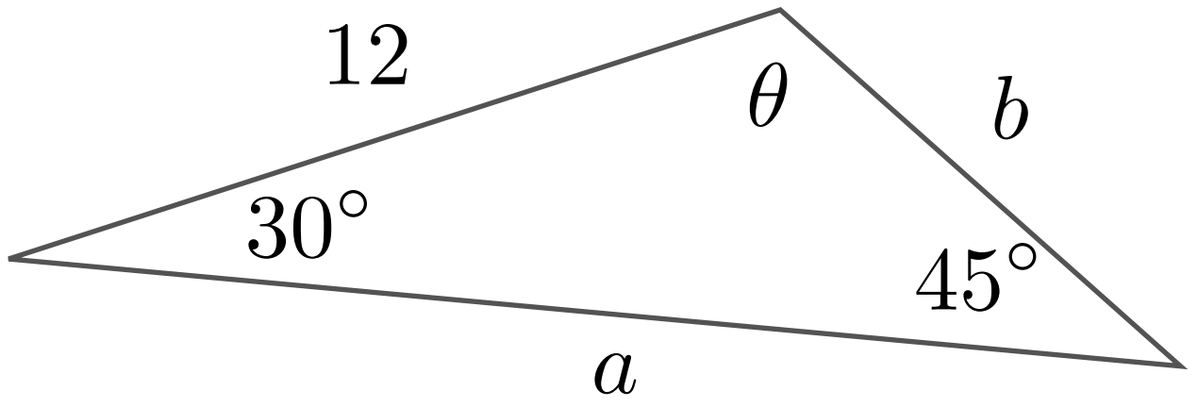
θ

Exemple



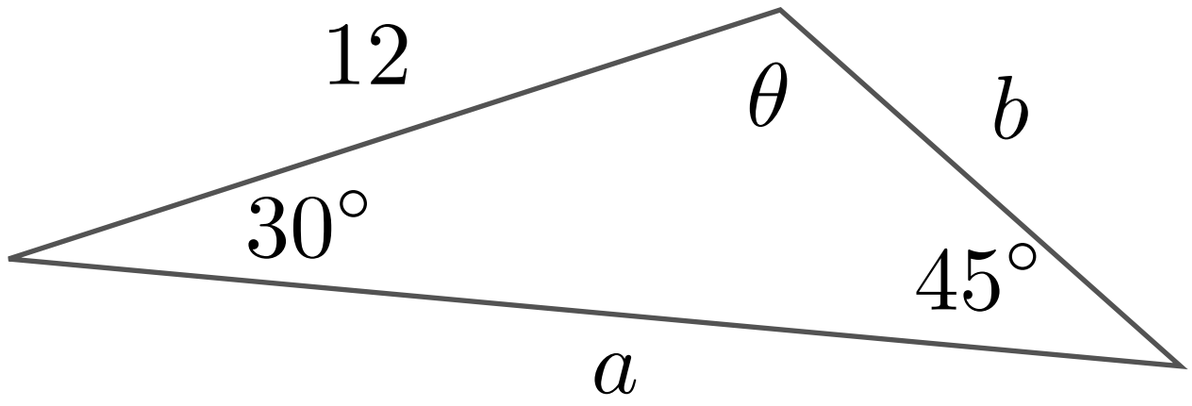
$$\theta = 180° - 30° - 45°$$

Exemple



$$\theta = 180° - 30° - 45° = 105°$$

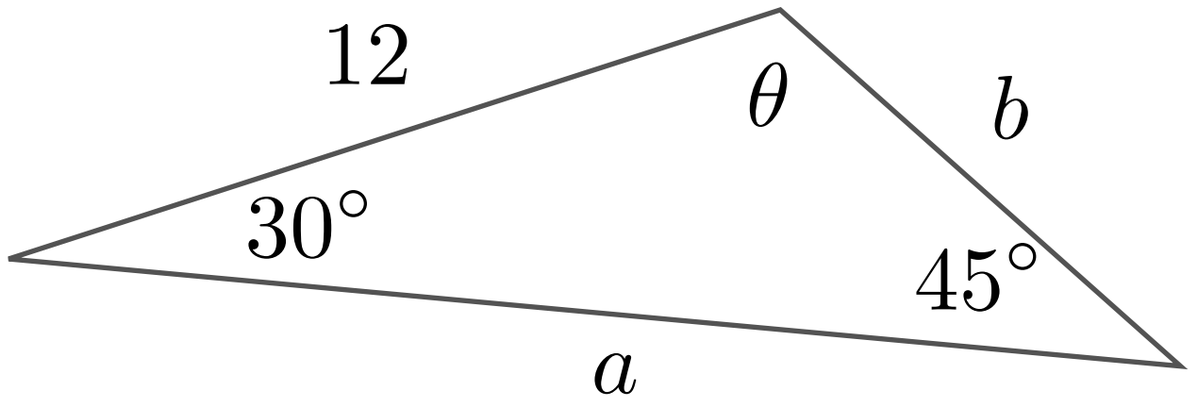
Exemple



$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

Exemple

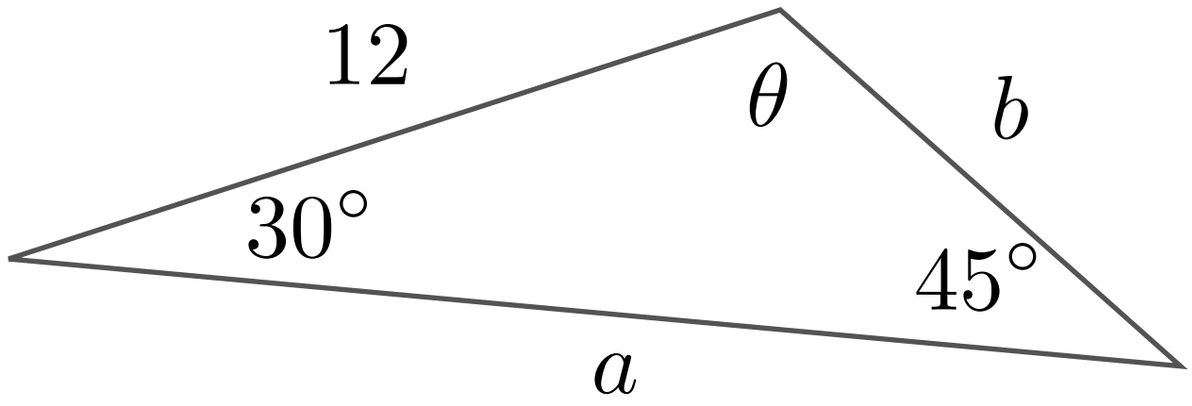


$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b$$

Exemple

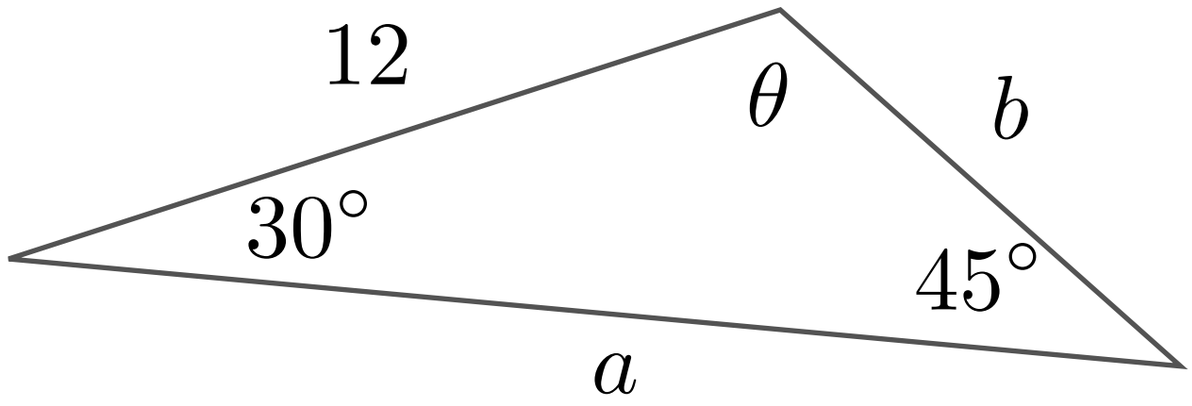


$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°}$$

Exemple

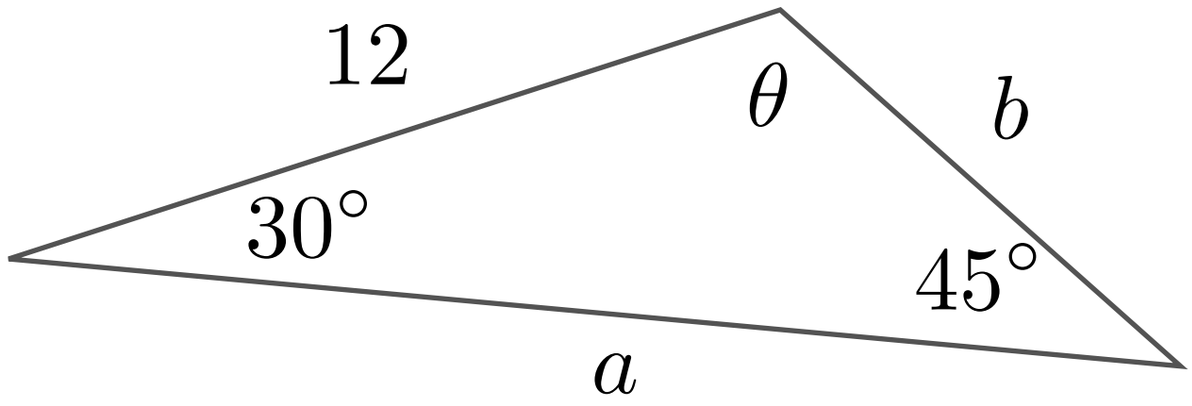


$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°} = \frac{12 \times \frac{1}{2}}{\frac{\sqrt{2}}{2}}$$

Exemple



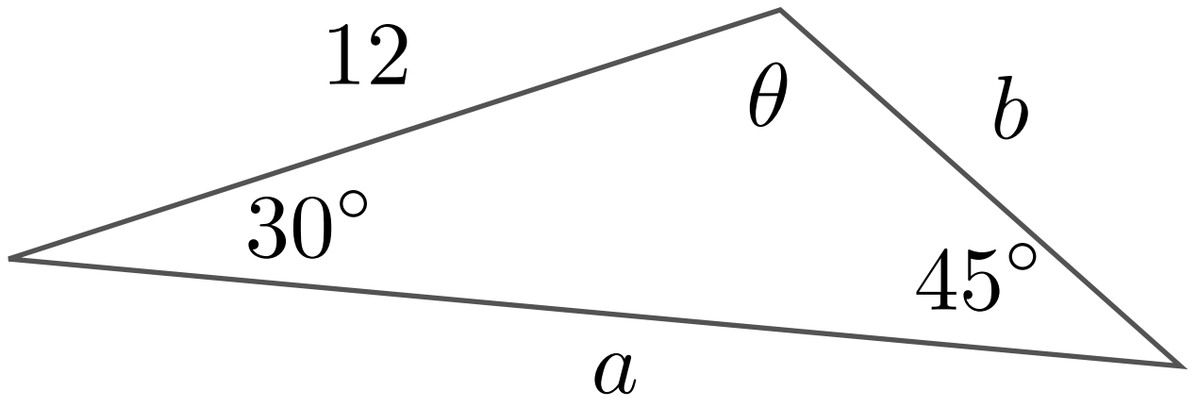
$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°} = \frac{12 \times \frac{1}{2}}{\frac{\sqrt{2}}{2}}$$

$$= 12 \times \frac{1}{2} \times \frac{2}{\sqrt{2}}$$

Exemple



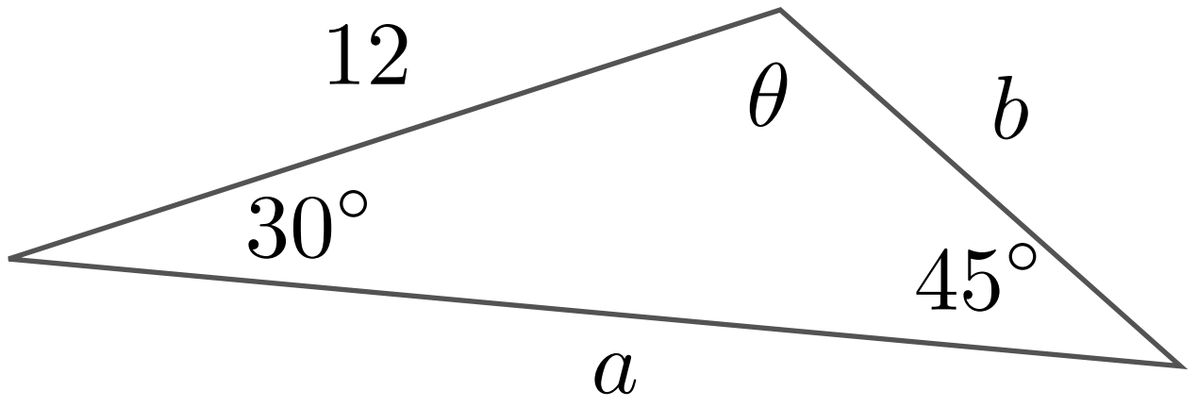
$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°} = \frac{12 \times \frac{1}{2}}{\frac{\sqrt{2}}{2}}$$

$$= 12 \times \frac{1}{2} \times \frac{2}{\sqrt{2}} = \frac{12}{\sqrt{2}}$$

Exemple



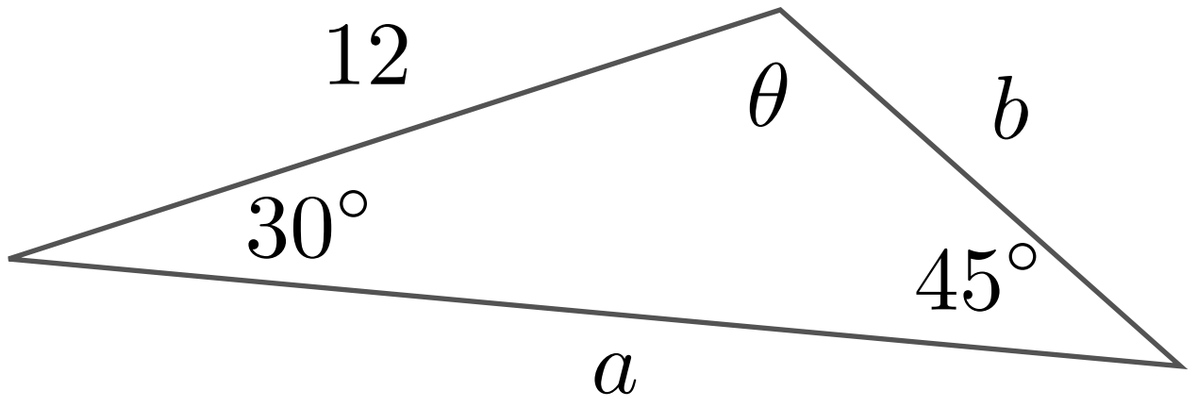
$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°} = \frac{12 \times \frac{1}{2}}{\frac{\sqrt{2}}{2}}$$

$$= 12 \times \frac{1}{2} \times \frac{2}{\sqrt{2}} = \frac{12}{\sqrt{2}} = \frac{12\sqrt{2}}{\sqrt{2}\sqrt{2}}$$

Exemple



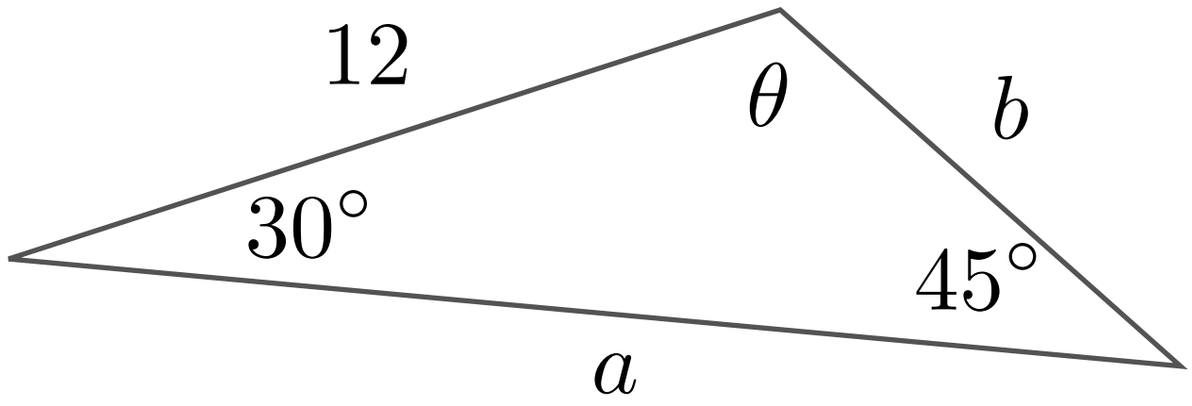
$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°} = \frac{12 \times \frac{1}{2}}{\frac{\sqrt{2}}{2}}$$

$$= 12 \times \frac{1}{2} \times \frac{2}{\sqrt{2}} = \frac{12}{\sqrt{2}} = \frac{12\sqrt{2}}{\sqrt{2}\sqrt{2}} = \frac{12\sqrt{2}}{2}$$

Exemple



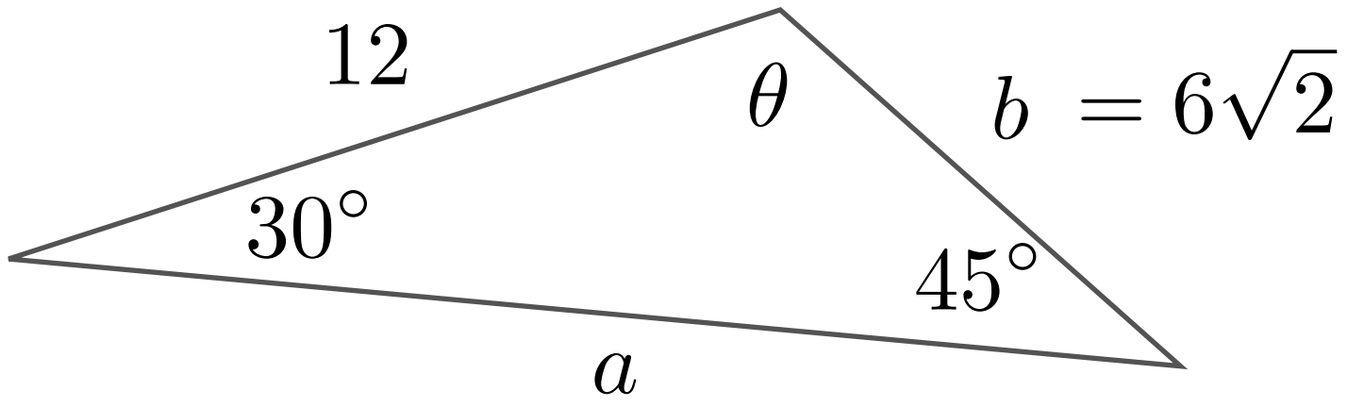
$$\theta = 180° - 30° - 45° = 105°$$

$$\frac{\sin 30°}{b} = \frac{\sin 45°}{12}$$

$$b = \frac{12 \times \sin 30°}{\sin 45°} = \frac{12 \times \frac{1}{2}}{\frac{\sqrt{2}}{2}}$$

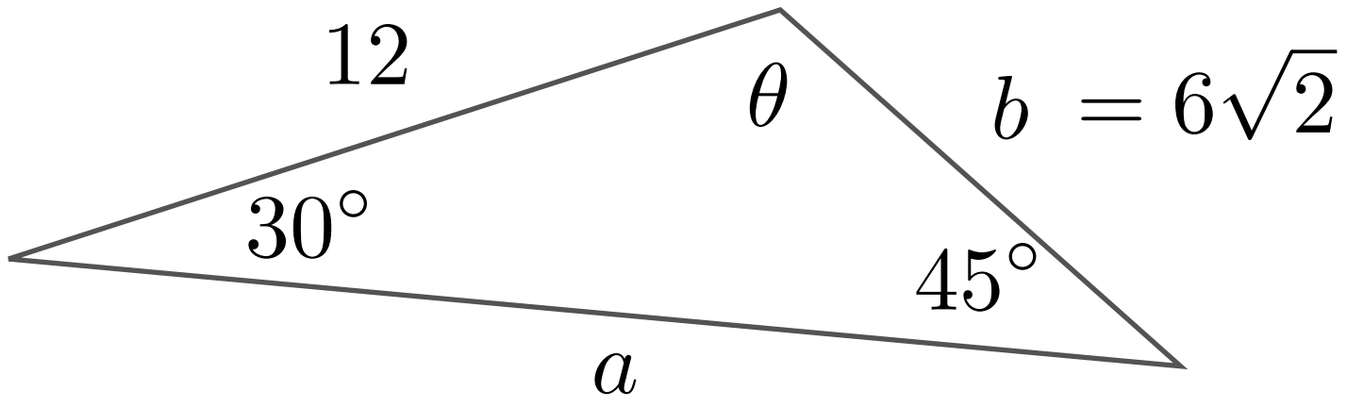
$$= 12 \times \frac{1}{2} \times \frac{2}{\sqrt{2}} = \frac{12}{\sqrt{2}} = \frac{12\sqrt{2}}{\sqrt{2}\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$$

Exemple



$\theta = 105°$

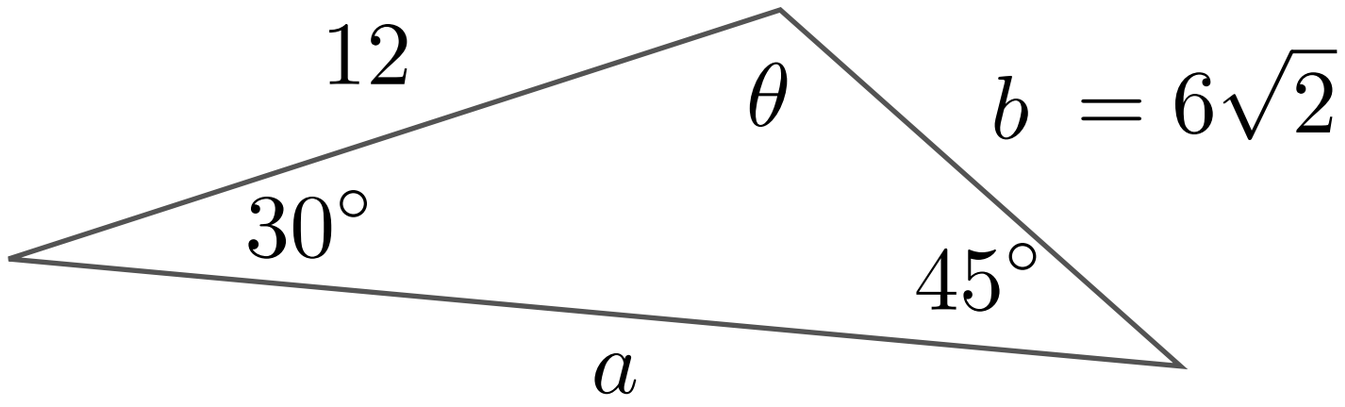
Exemple



$$\theta = 105°$$

$$\frac{\sin 105°}{a} = \frac{\sin 45°}{12}$$

Exemple

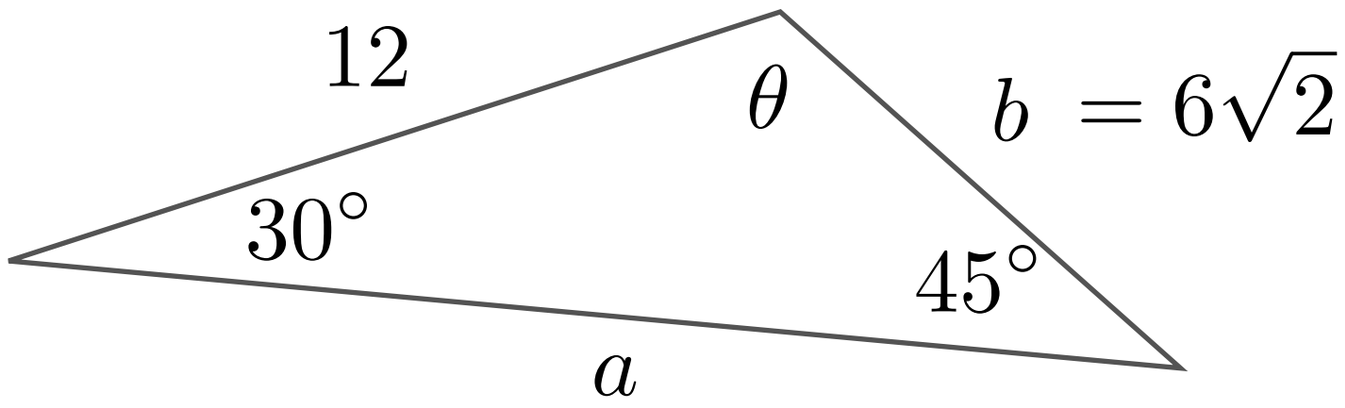


$$\theta = 105°$$

$$\frac{\sin 105°}{a} = \frac{\sin 45°}{12}$$

$$a$$

Exemple

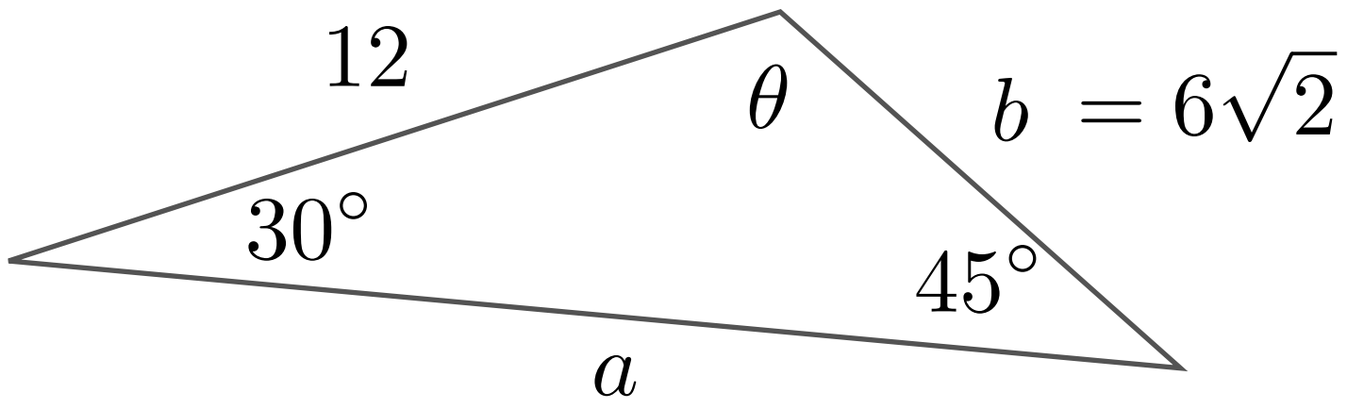


$$\theta = 105°$$

$$\frac{\sin 105°}{a} = \frac{\sin 45°}{12}$$

$$a = \frac{12 \times \sin 105°}{\sin 45°}$$

Exemple

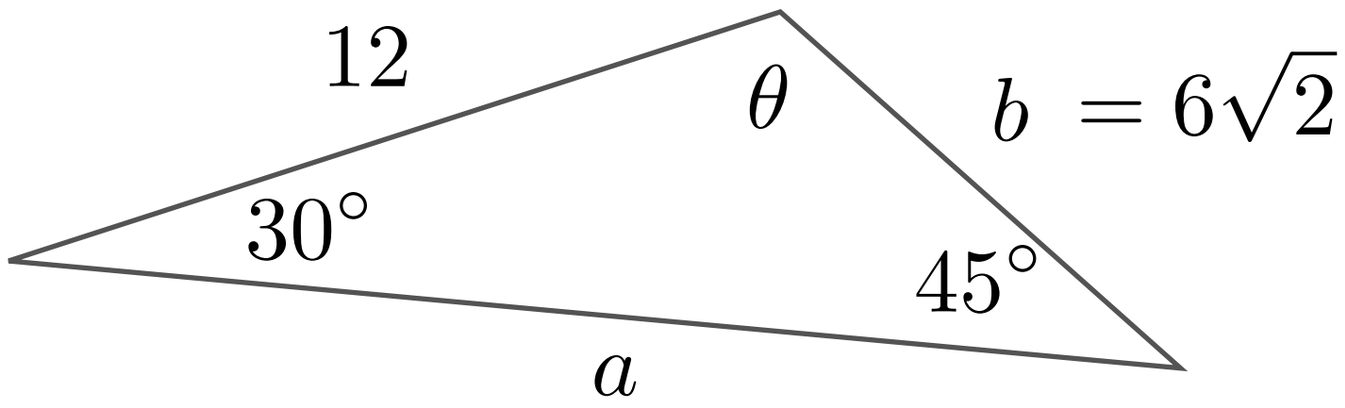


$$\theta = 105°$$

$$\frac{\sin 105°}{a} = \frac{\sin 45°}{12}$$

$$a = \frac{12 \times \sin 105°}{\sin 45°} = \frac{12 \times \sin 105°}{\frac{\sqrt{2}}{2}}$$

Exemple



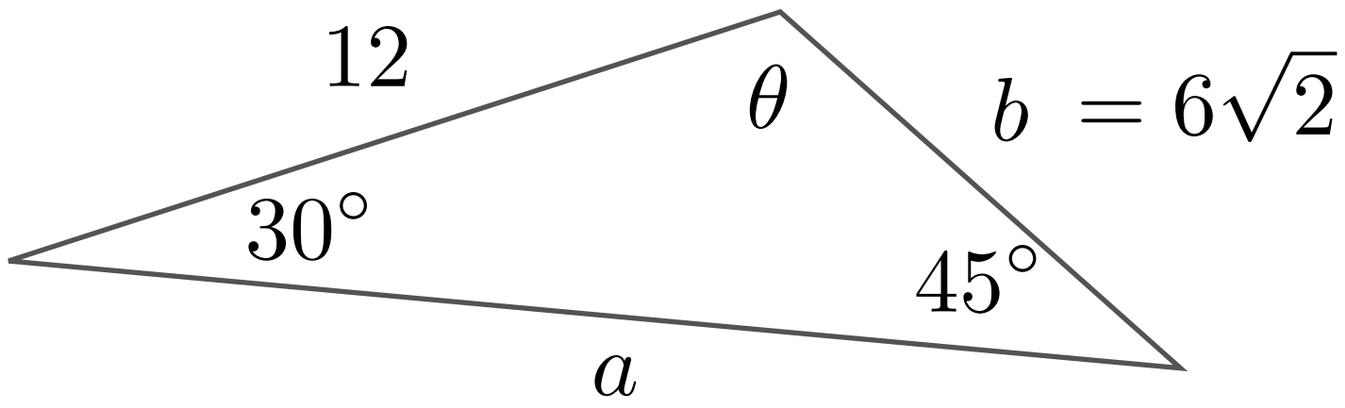
$$\theta = 105°$$

$$\frac{\sin 105°}{a} = \frac{\sin 45°}{12}$$

$$a = \frac{12 \times \sin 105°}{\sin 45°} = \frac{12 \times \sin 105°}{\frac{\sqrt{2}}{2}}$$

$$= \frac{24 \times \sin 105°}{\sqrt{2}}$$

Exemple



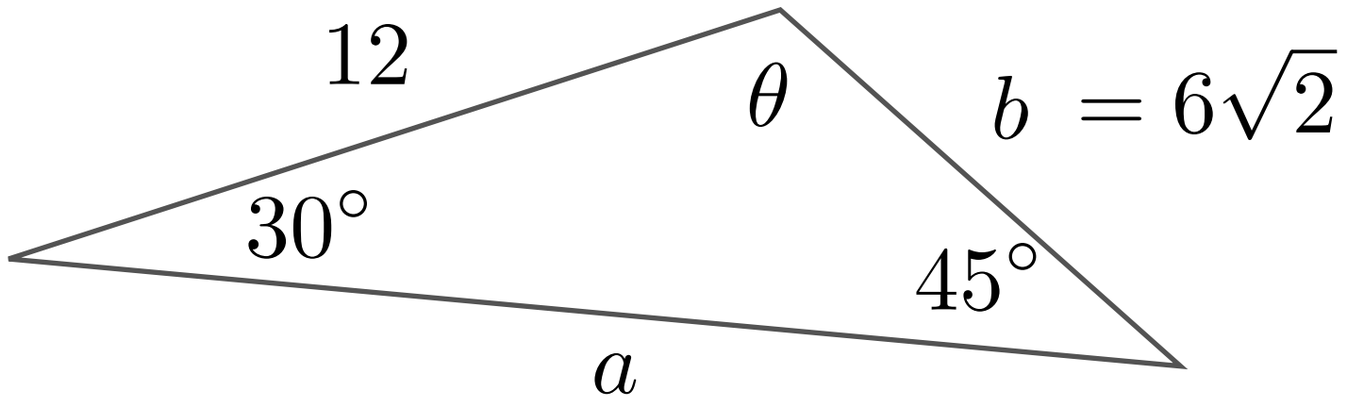
$$\theta = 105°$$

$$\frac{\sin 105°}{a} = \frac{\sin 45°}{12}$$

$$a = \frac{12 \times \sin 105°}{\sin 45°} = \frac{12 \times \sin 105°}{\frac{\sqrt{2}}{2}}$$

$$= \frac{24 \times \sin 105°}{\sqrt{2}} = 12 \times \sqrt{2} \times \sin 105°$$

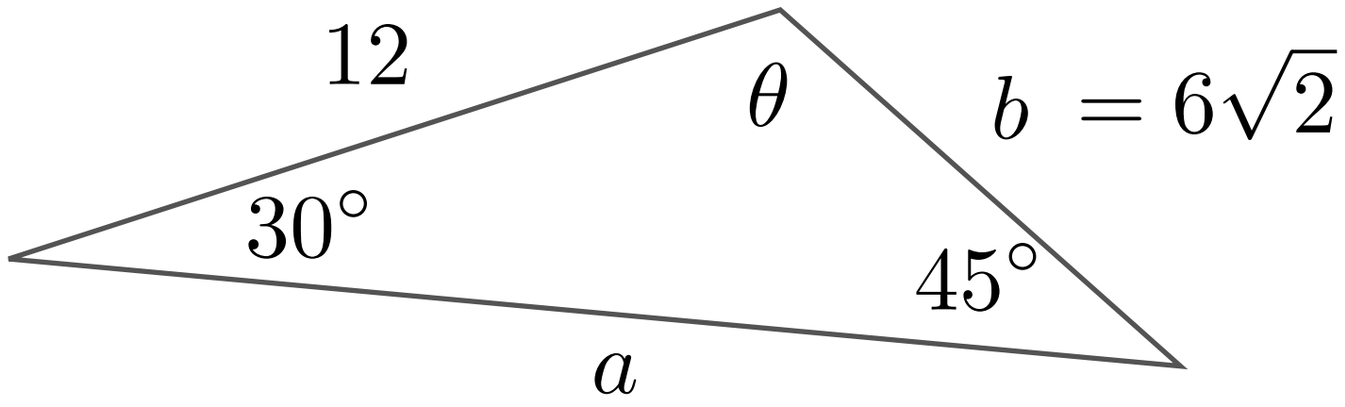
Exemple



$$\theta = 105°$$

$$a = 12 \times \sqrt{2} \times \sin 105°$$

Exemple

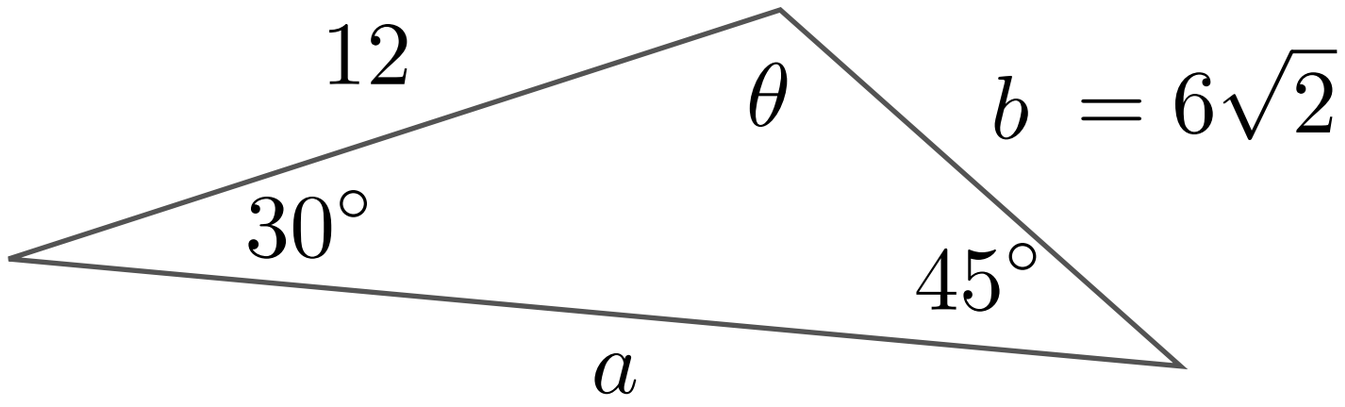


$$\theta = 105°$$

$$a = 12 \times \sqrt{2} \times \sin 105°$$

$$\sin 105°$$

Exemple

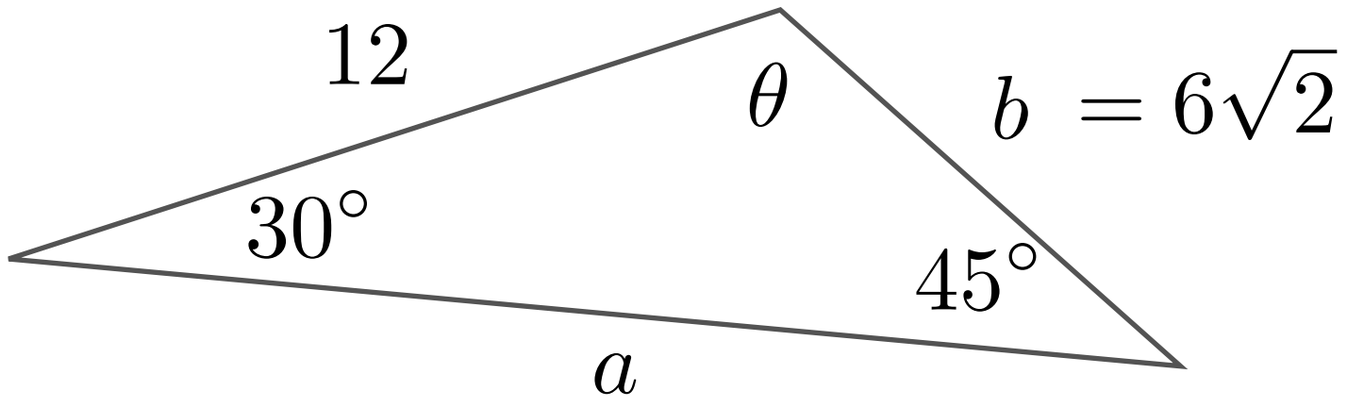


$$\theta = 105°$$

$$a = 12 \times \sqrt{2} \times \sin 105°$$

$$\sin 105° = \sin(45° + 60°)$$

Exemple

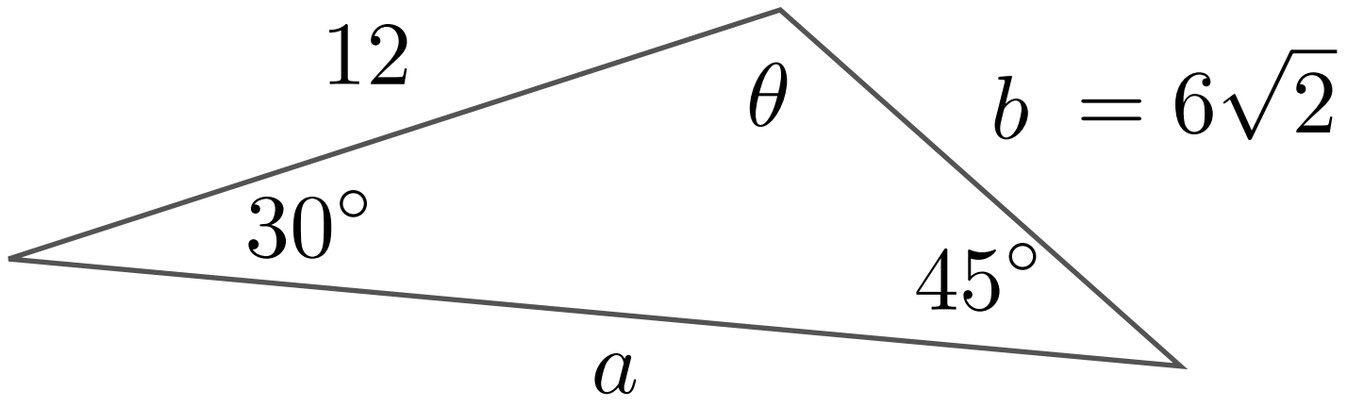


$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ$$

$$\begin{aligned} \sin 105^\circ &= \sin(45^\circ + 60^\circ) \\ &= \sin(45^\circ)\cos(60^\circ) + \sin(60^\circ)\cos(45^\circ) \end{aligned}$$

Exemple

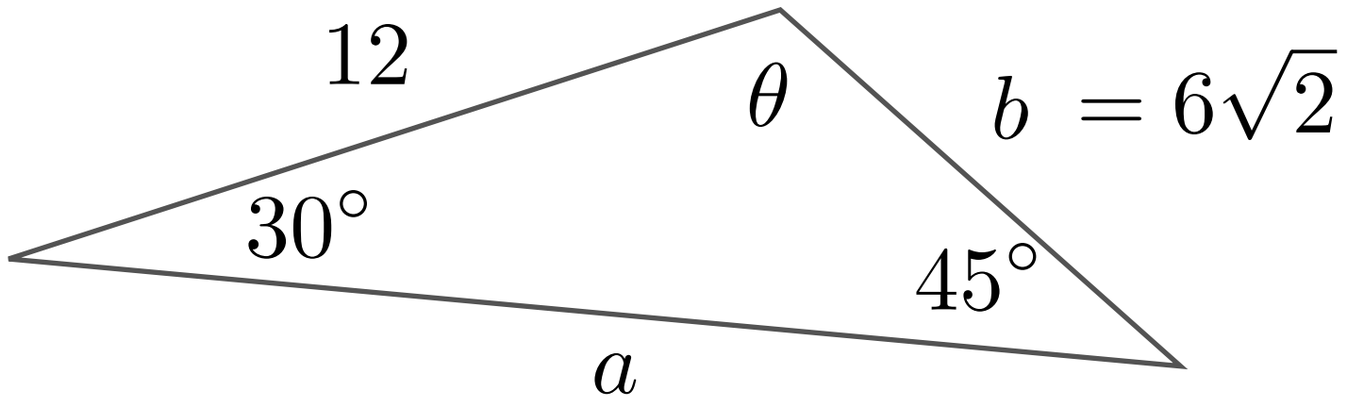


$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ$$

$$\begin{aligned}
\sin 105^\circ &= \sin(45^\circ + 60^\circ) \\
&= \sin(45^\circ)\cos(60^\circ) + \sin(60^\circ)\cos(45^\circ) \\
&= \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2}
\end{aligned}$$

Exemple

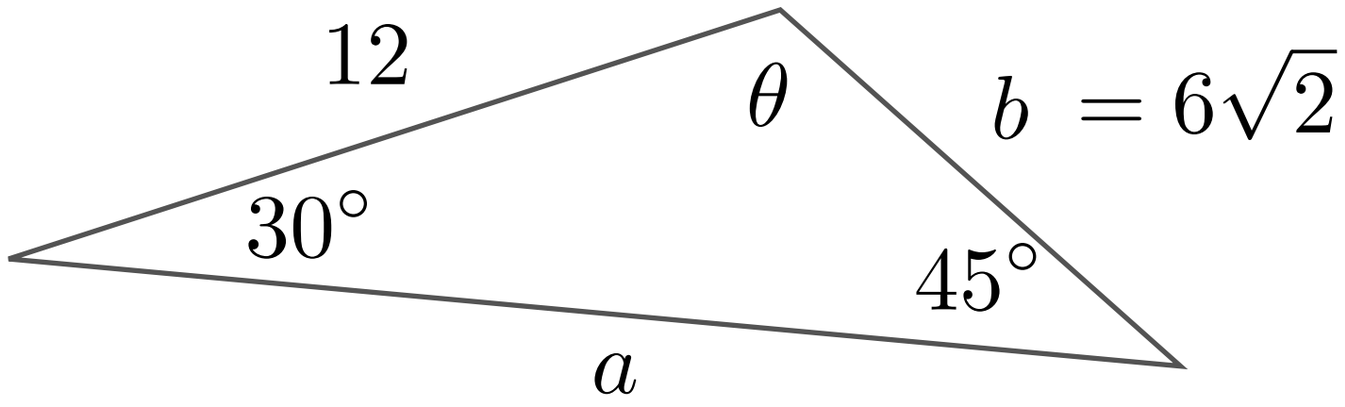


$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ$$

$$\begin{aligned}
\sin 105^\circ &= \sin(45^\circ + 60^\circ) \\
&= \sin(45^\circ)\cos(60^\circ) + \sin(60^\circ)\cos(45^\circ) \\
&= \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2} \\
&= \frac{\sqrt{2} + \sqrt{3} \times \sqrt{2}}{4}
\end{aligned}$$

Exemple

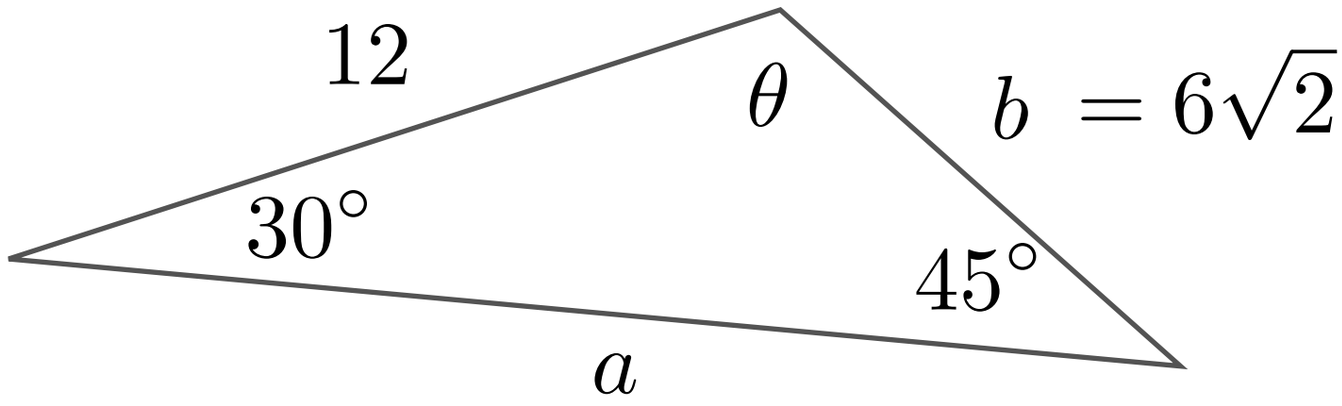


$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ$$

$$\begin{aligned}
\sin 105^\circ &= \sin(45^\circ + 60^\circ) \\
&= \sin(45^\circ)\cos(60^\circ) + \sin(60^\circ)\cos(45^\circ) \\
&= \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2} \\
&= \frac{\sqrt{2} + \sqrt{3} \times \sqrt{2}}{4} = \frac{\sqrt{2}(1+\sqrt{3})}{4}
\end{aligned}$$

Exemple

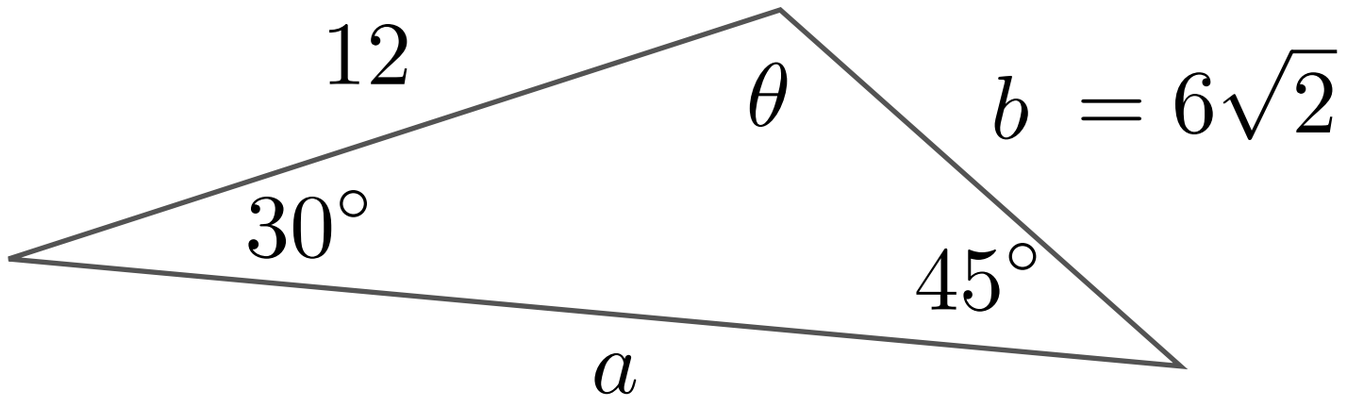


$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ = 12 \times \sqrt{2} \times \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

$$\begin{aligned}
\sin 105^\circ &= \sin(45^\circ + 60^\circ) \\
&= \sin(45^\circ)\cos(60^\circ) + \sin(60^\circ)\cos(45^\circ) \\
&= \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2} \\
&= \frac{\sqrt{2} + \sqrt{3} \times \sqrt{2}}{4} = \frac{\sqrt{2}(1+\sqrt{3})}{4}
\end{aligned}$$

Exemple

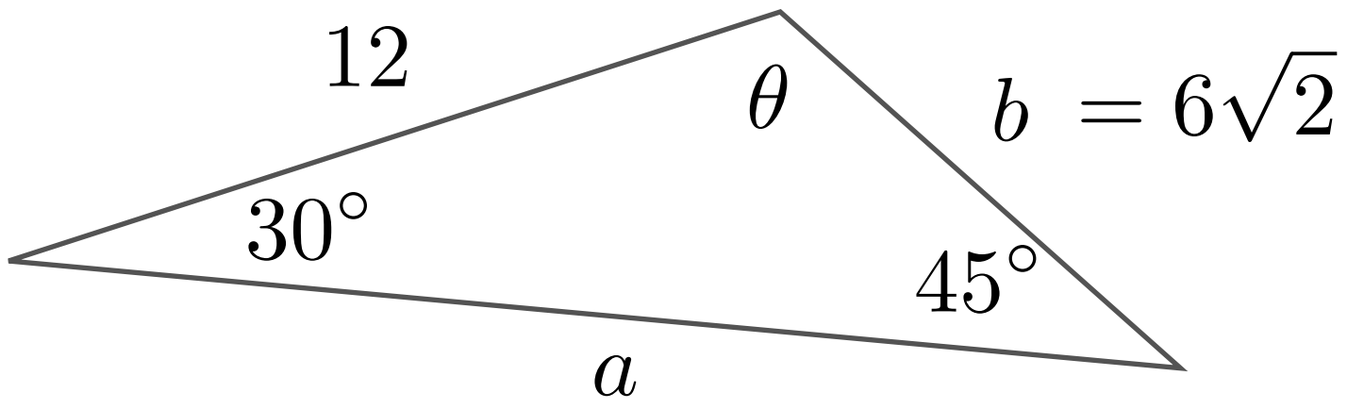


$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ = 12 \times \sqrt{2} \times \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

$$\sin 105^\circ = \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

Exemple



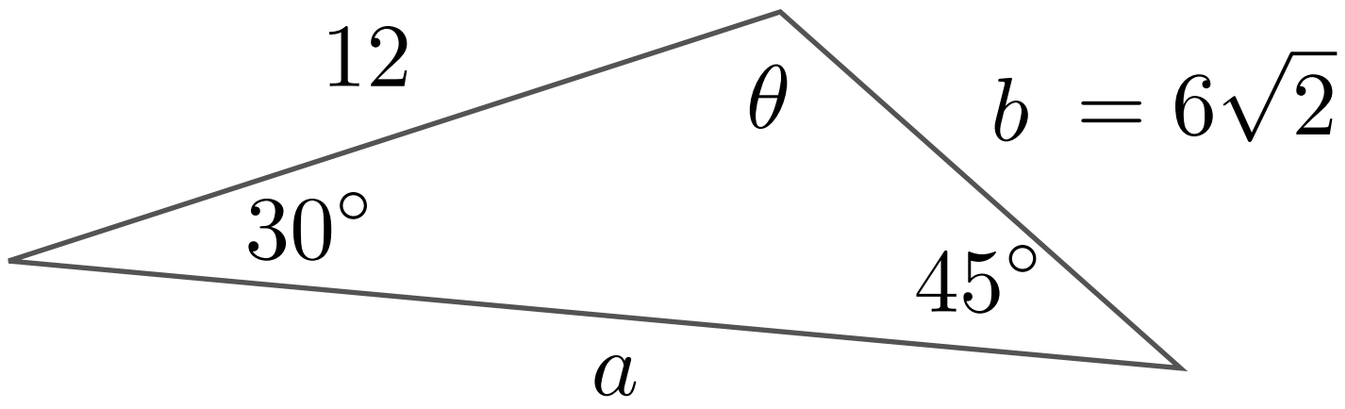
$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ = 12 \times \sqrt{2} \times \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

$$= 3 \times \sqrt{2} \times \sqrt{2}(1+\sqrt{3})$$

$$\sin 105^\circ = \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

Exemple



$$\theta = 105^\circ$$

$$a = 12 \times \sqrt{2} \times \sin 105^\circ = 12 \times \sqrt{2} \times \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

$$= 3 \times \sqrt{2} \times \sqrt{2}(1+\sqrt{3}) = 6(1+\sqrt{3})$$

$$\sin 105^\circ = \frac{\sqrt{2}(1+\sqrt{3})}{4}$$

Faites les exercices suivants

p. 466 # 38

Devoir: p.466 # 38 à 46