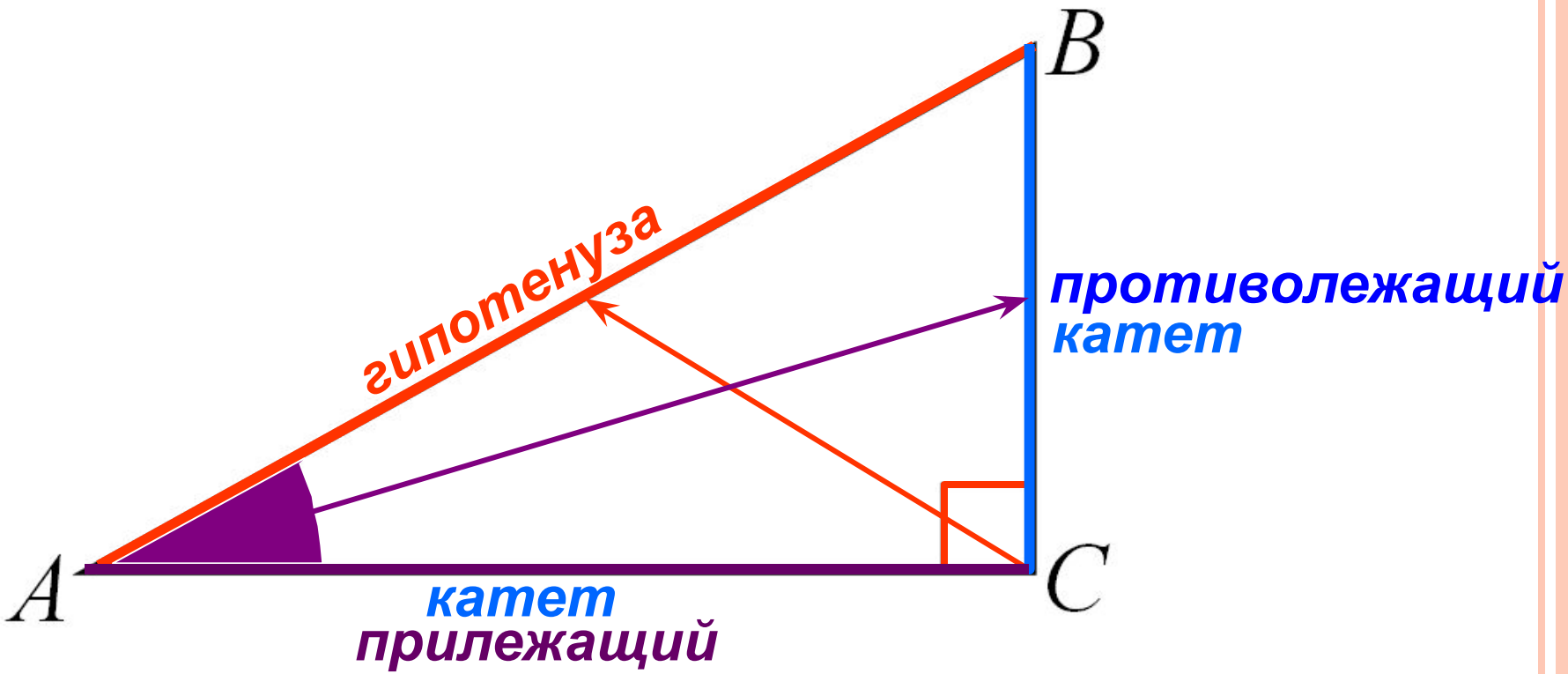
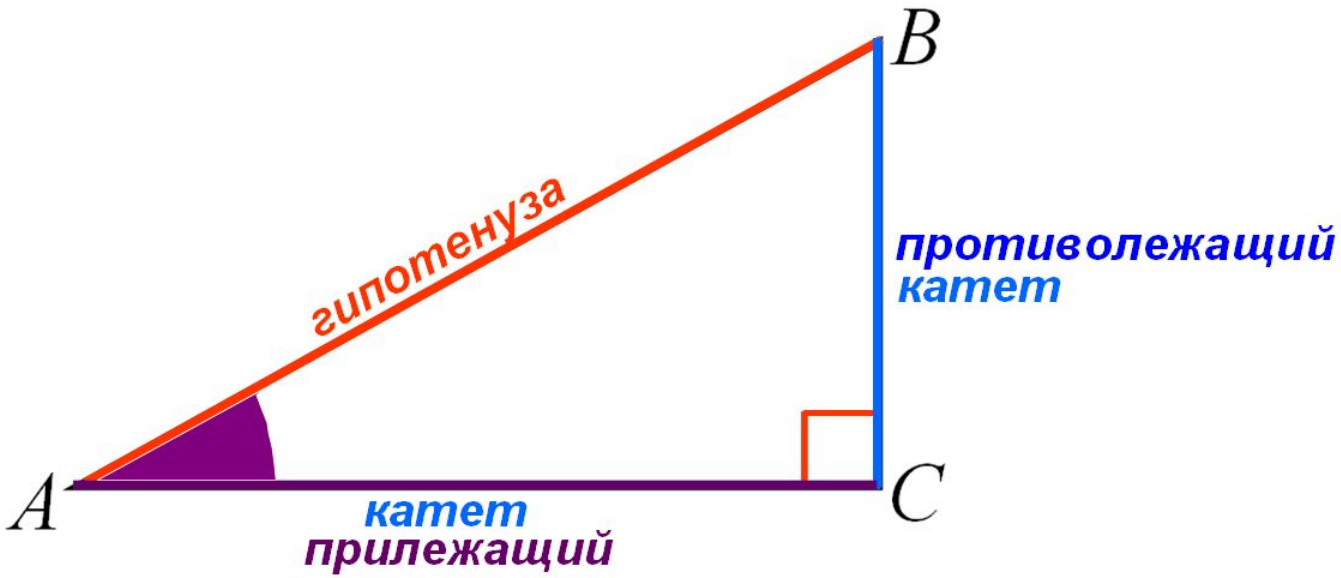
СИНУС, КОСИНУС И ТАНГЕНС ОСТРОГО УГЛА ПРЯМОУГОЛЬНОГО ТРЕУГОЛЬНИКА

Урок-закрепление
изученного материала

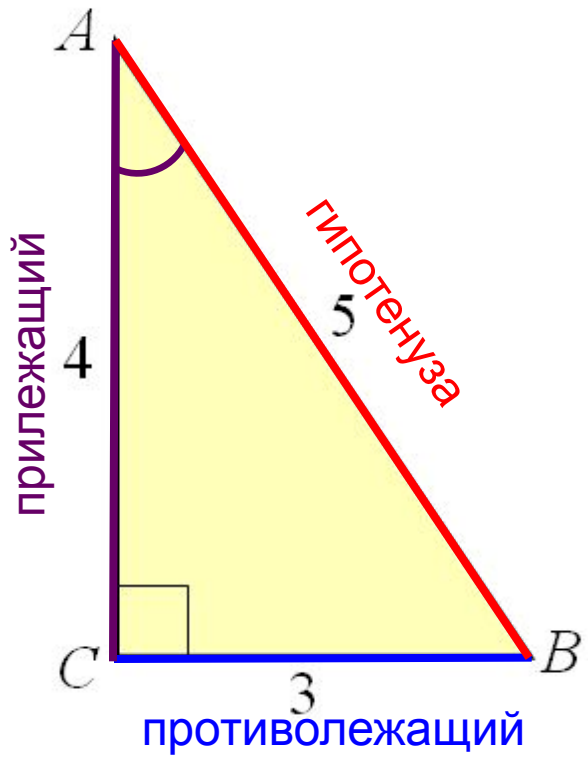

B
гипотенуза
противолежащий
катет
A
C
катет
прилежащий



$$\sin A = \frac{\text{противолежащий катет}}{\text{гипотенуза}} \qquad \sin A = \frac{BC}{AB}$$

$$\cos A = \frac{\text{прилежащий катет}}{\text{гипотенуза}} \qquad \cos A = \frac{AC}{AB}$$

$$tgA = \frac{\text{противолежащий катет}}{\text{прилежащий катет}} \qquad tgA = \frac{BC}{AC}$$

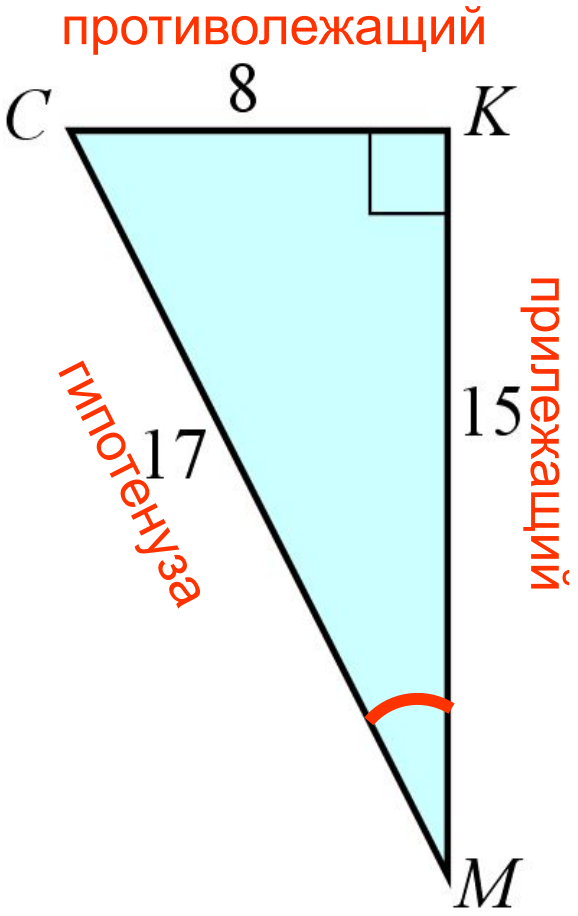


Найти:

$$\sin\angle A = \frac{CB}{AB} = \frac{3}{5}$$

$$\cos\angle A = \frac{AC}{AB} = \frac{4}{5}$$

$$tg\angle A = \frac{CB}{AC} = \frac{3}{4}$$

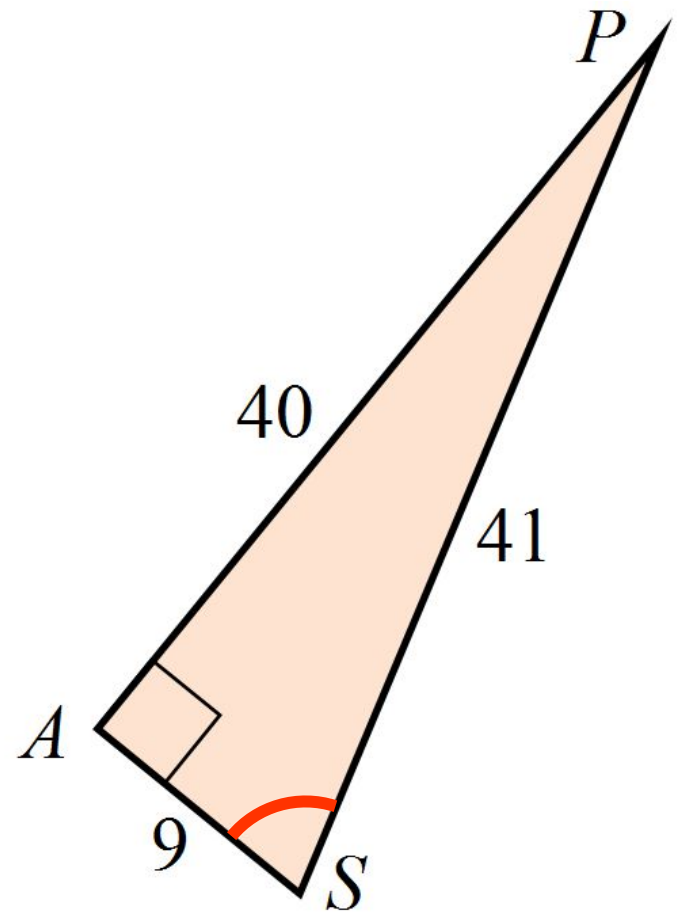


Найти:

$$\sin\angle M = \frac{CK}{CM} = \frac{8}{17}$$

$$\cos\angle M = \frac{MK}{CM} = \frac{15}{17}$$

$$tg\angle M = \frac{CK}{KM} = \frac{8}{15}$$

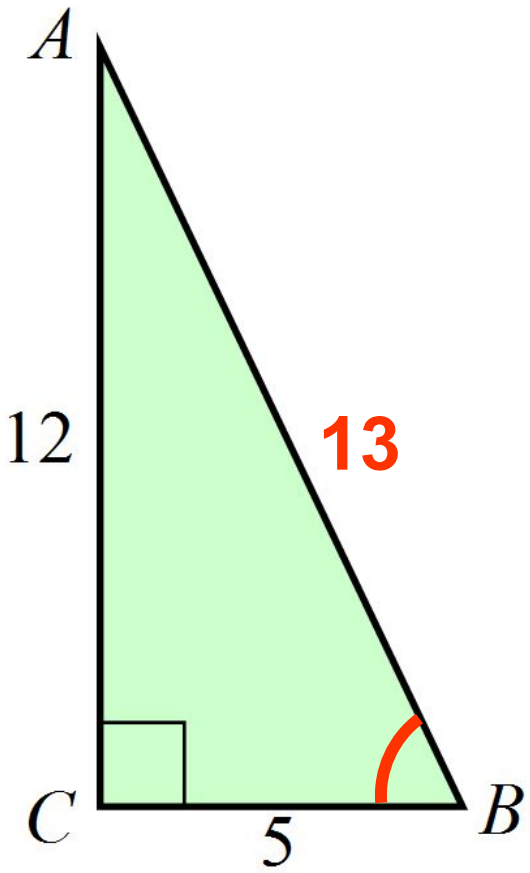


Найти:

$$\sin \angle S = \frac{40}{41}$$

$$\cos \angle S = \frac{9}{41}$$

$$tg \angle S = \frac{40}{9}$$



Найти:

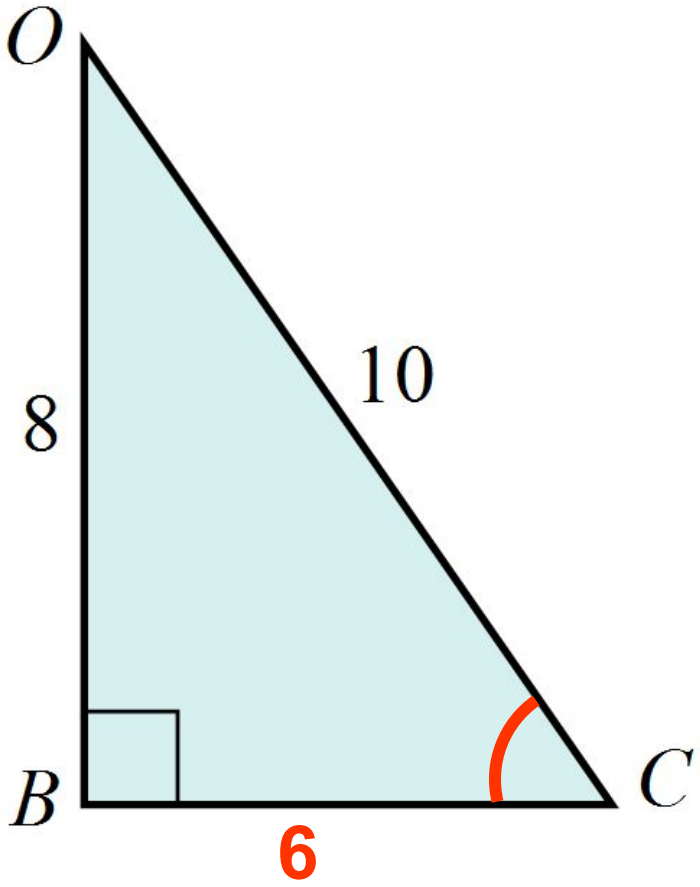
$$\sin \angle B = \frac{12}{13}$$

$$\cos \angle B = \frac{5}{13}$$

$$tg \angle B = \frac{12}{5} = 2{,}4$$

$$x^2 = 5^2 + 12^2$$

$$x^2 = 169$$

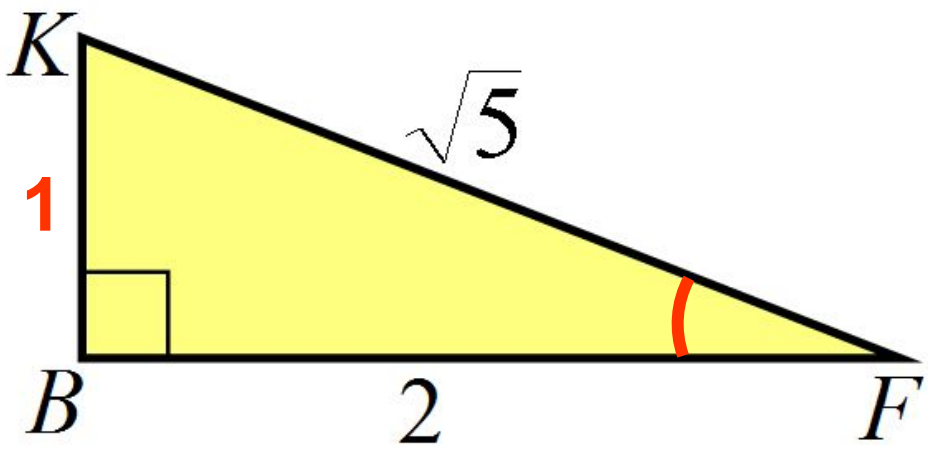


Найти:

$$sin\angle C = \frac{8}{10} = 0{,}8$$

$$cos\angle C = \frac{6}{10} = 0{,}6$$

$$tg\angle C = \frac{8}{6} = \frac{4}{3}$$

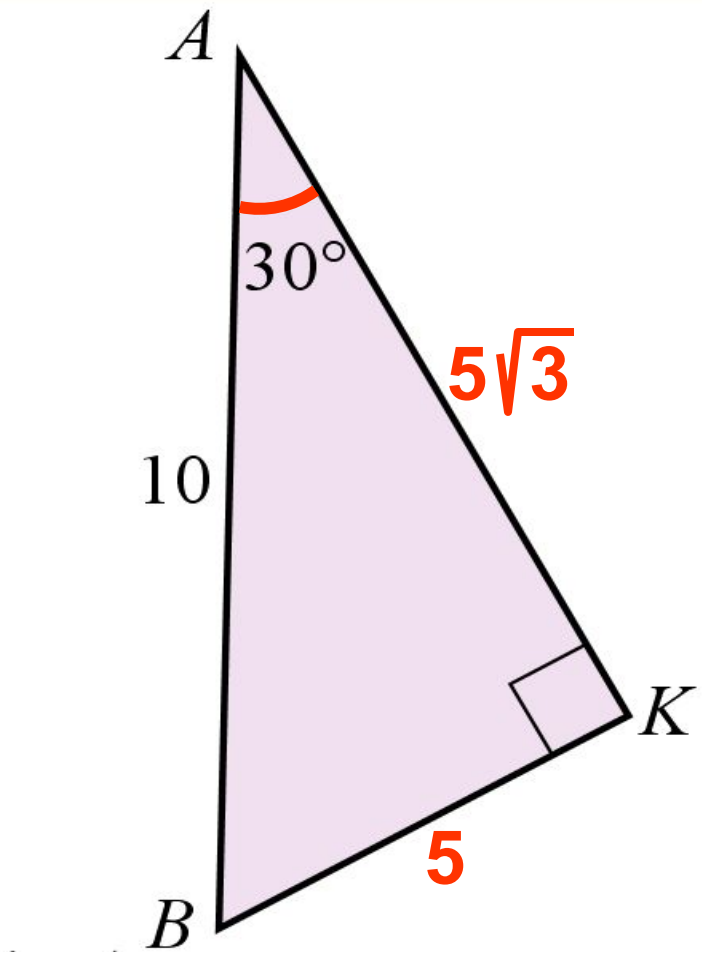


Найти:

$$\sin \angle F = \frac{1}{\sqrt{5}}$$

$$\cos \angle F = \frac{2}{\sqrt{5}}$$

$$tg \angle F = \frac{1}{2}$$

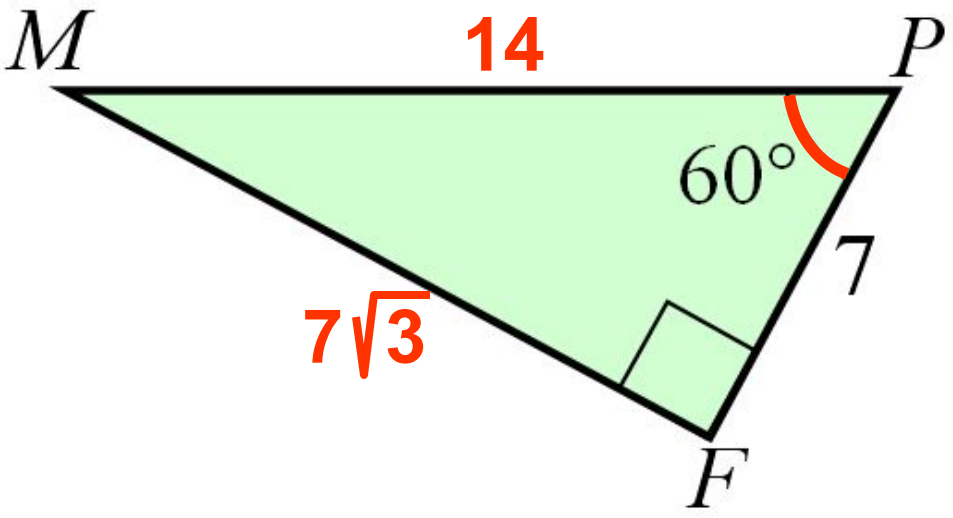


Найти:

$$\sin 30^\circ = \frac{1}{2}$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$tg\ 30^\circ = \frac{1}{\sqrt{3}}$$

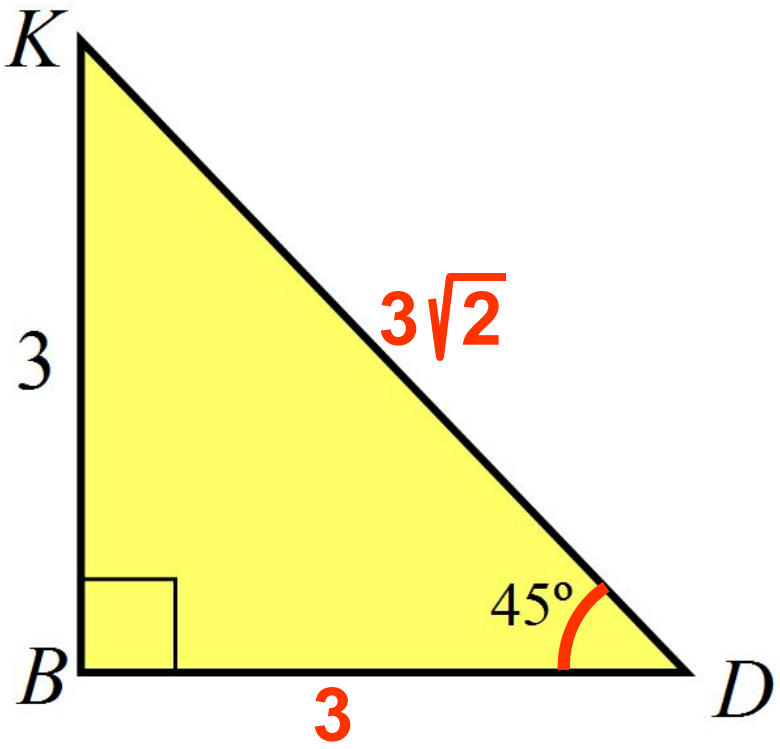


Найти:

$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 60^\circ = \frac{1}{2}$$

$$tg\ 60^\circ = \sqrt{3}$$



Найти:

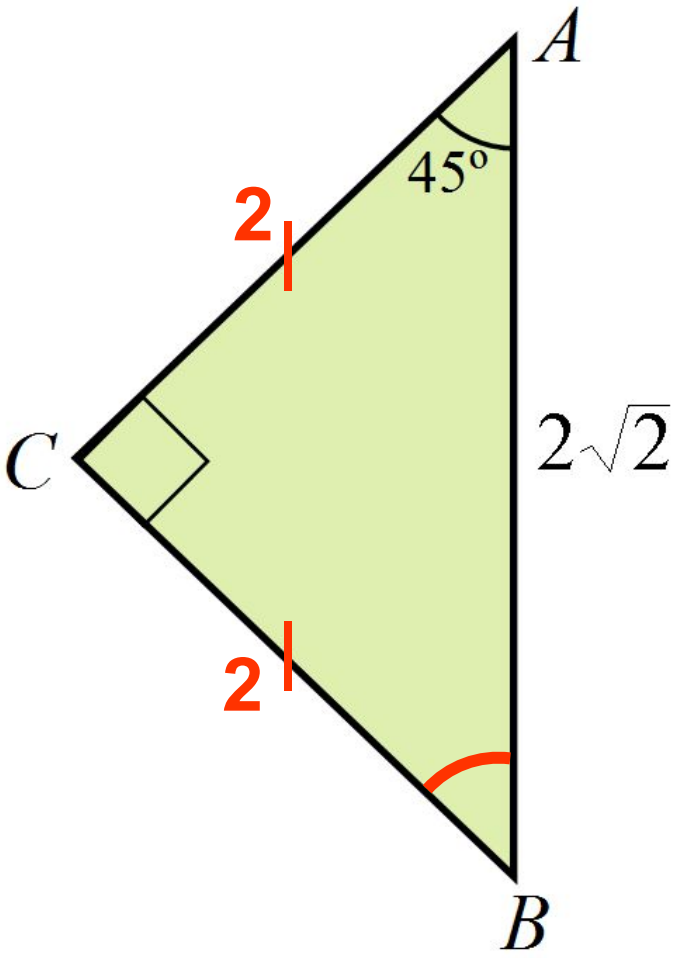
$$\sin 45^\circ = \frac{1}{\sqrt{2}}$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}}$$

$$tg\ 45^\circ = 1$$

$$x^2 = 3^2 + 3^2$$

$$x^2 = 18$$



Найти:

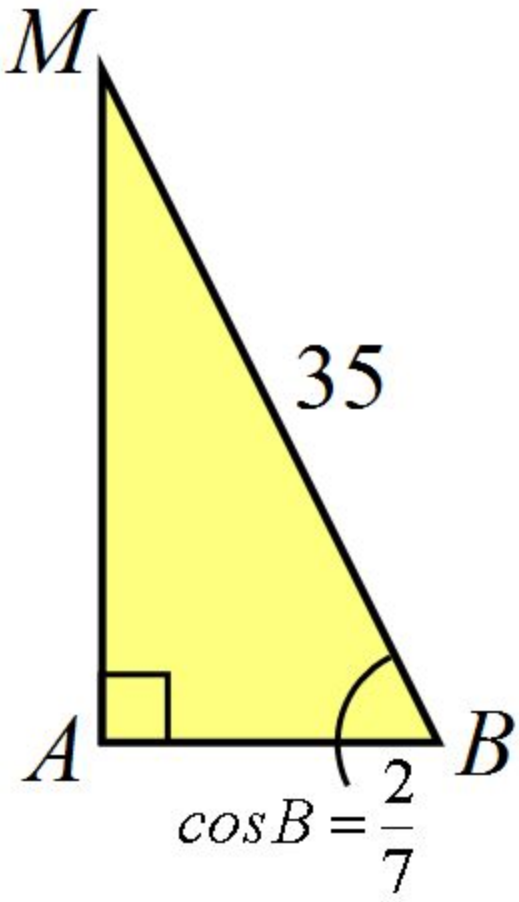
$$\sin\angle B = \frac{1}{\sqrt{2}}$$

$$\cos\angle B = \frac{1}{\sqrt{2}}$$

$$tg\angle B = 1$$

$$x^2 + x^2 = \left(2\sqrt{2}\right)^2$$

$$2x^2 = 8$$

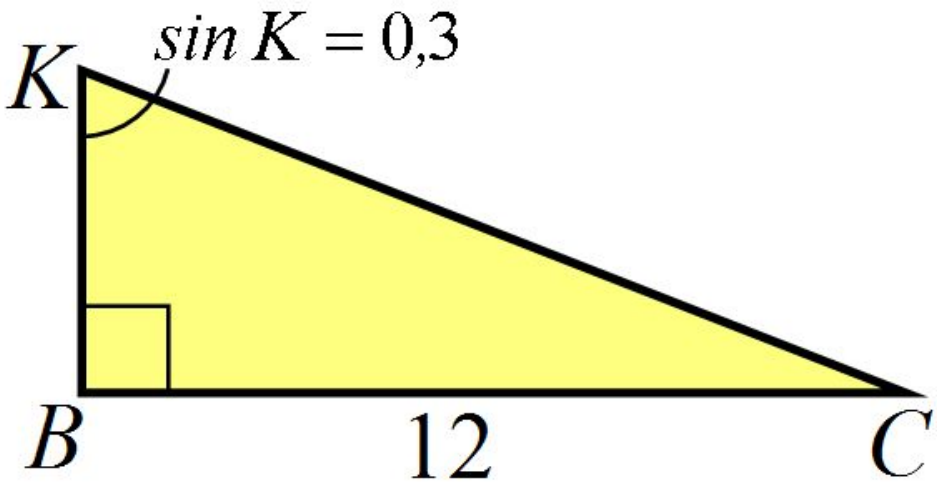


Найти AB

$$\cos B = \frac{2}{7}$$

$$\frac{AB}{MB} = \frac{2}{7}$$

$$\frac{AB}{35} = \frac{2}{7} \rightarrow AB = 10$$

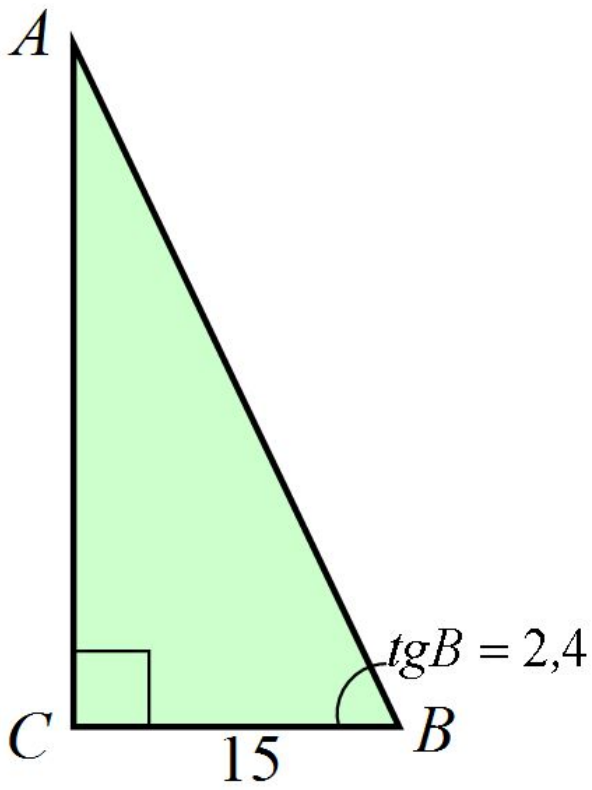


Найти KC

$$\sin K = \frac{3}{10}$$

$$\frac{BC}{KC} = \frac{3}{10}$$

$$\frac{12}{KC} = \frac{3}{10} \rightarrow KC = 40$$



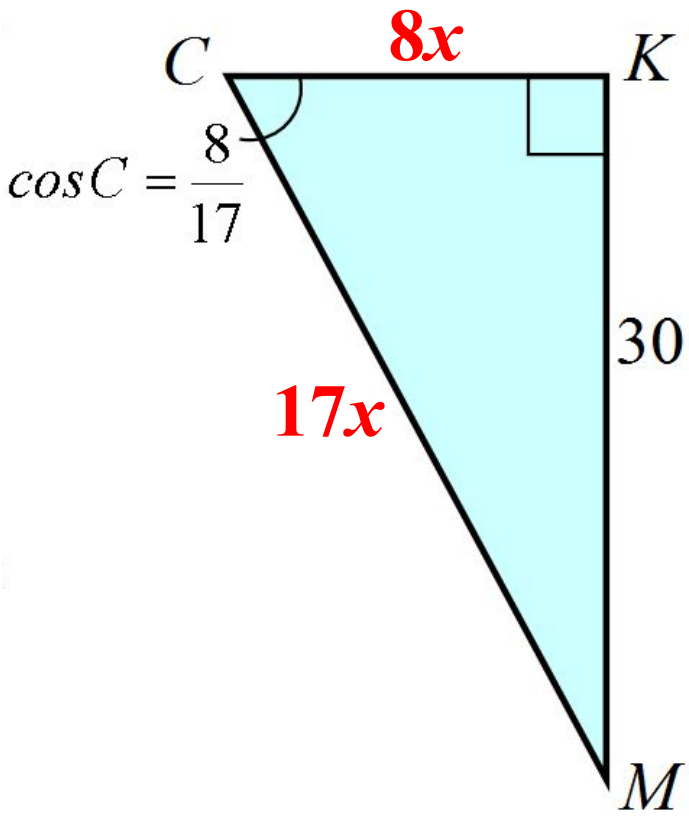
Найти AC и AB

$$tgB = \frac{24}{10}$$

$$\frac{AC}{BC} = \frac{12}{5}$$

$$\frac{AC}{15} = \frac{12}{5} \rightarrow AC = 36$$

$$AB = 39$$



Найти CK и CM

$$\cos C = \frac{8}{17}$$

$$\downarrow$$

$$\frac{?\,CK}{?\,CM} = \frac{8}{17} \rightarrow \begin{matrix} CK = 8x \\ CM = 17x \end{matrix}$$

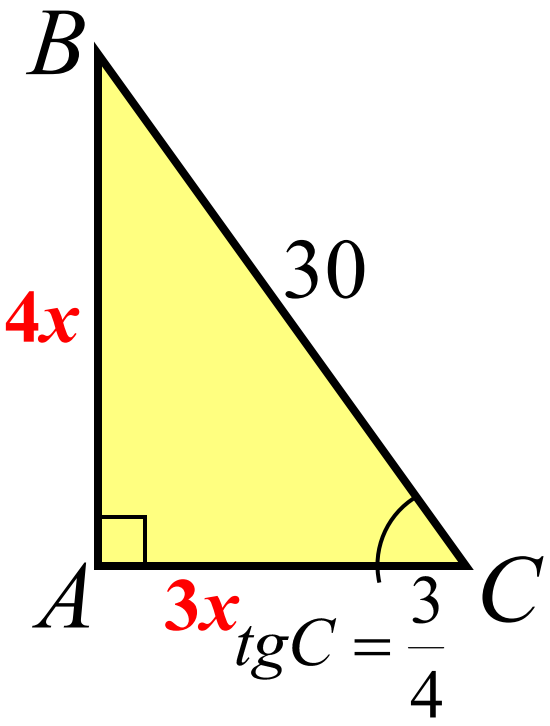
$$(17x)^2 = (8x)^2 + 30^2$$

$$225x^2 = 900$$

$$x^2 = 4$$

$$CK = 8 \cdot 2 = 16$$

$$CM = 17 \cdot 2 = 34$$



Найти AB

$$tgC = \frac{3}{4}$$

$$? \quad \frac{AB}{AC} = \frac{3}{4} \quad ? \quad \rightarrow \quad \begin{matrix} AB = 3x \\ AC = 4x \end{matrix}$$

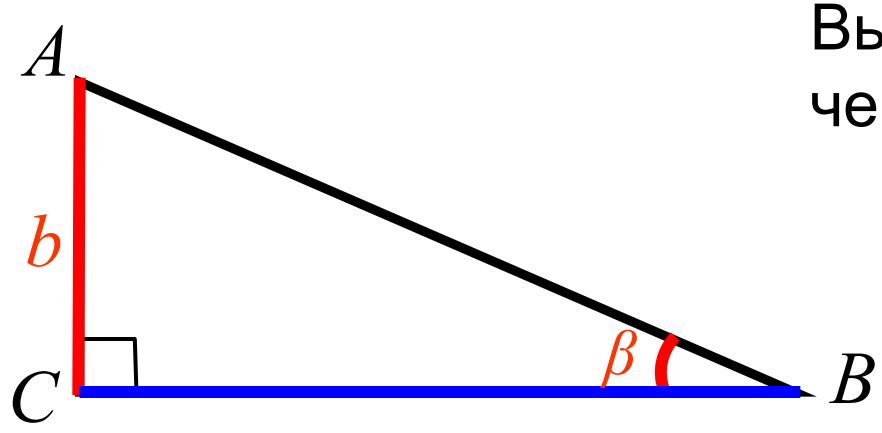
$$30^2 = (3x)^2 + (4x)^2$$

$$25x^2 = 900$$

$$x^2 = 36$$

$$AB = 3 \cdot 6 = 18$$

$$AC = 4 \cdot 6 = 24$$



Выразить катет *BC* через b и β.

1. Для данного угла **β**

AC – противолежащий катет,
CB – прилежащий катет

2. Записать функцию угла **β**, которая вычисляется с помощью этих сторон

$$tg\beta = \frac{AC}{CB}$$

3. Выразить **CB**

$$CB = \frac{AC}{tg\beta}$$