

Let's take this one step further.

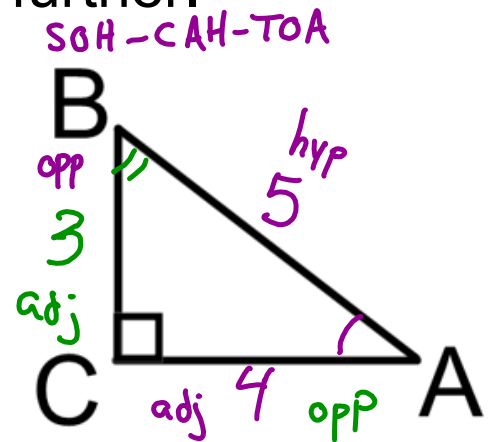
Ex. 1

In $\triangle ABC$ $\cos(A) = \frac{4}{5}$, and $\tan(B) = \frac{4}{3}$.
 Find the $\cos(B)$, $\sin(B)$, and the $\tan(A)$.

$$\cos(B) = \frac{3}{5}$$

$$\sin(B) = \frac{4}{5}$$

$$\tan(A) = \frac{3}{4}$$



Ex. 2

In $\triangle DEF$, $\tan(\underline{E}) = \frac{\sqrt{3} \text{ opp}}{1 \text{ adj}}$
 what are the following?

Leave answers in simplest radical form.

$$\cos(E) = \frac{1}{2}$$

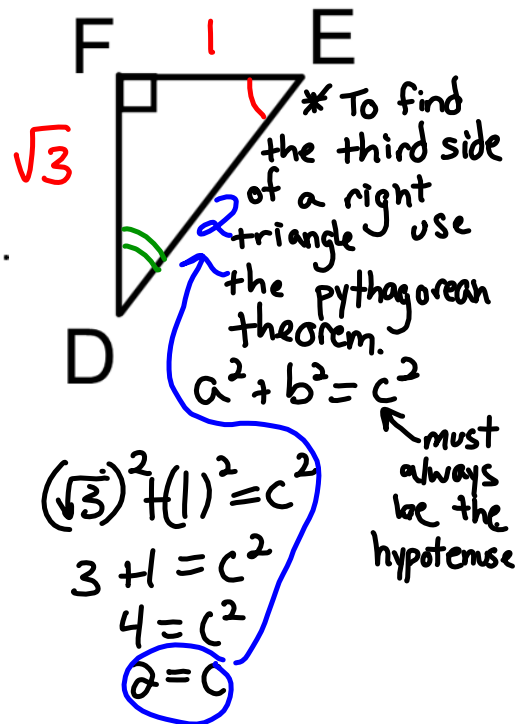
$$\sin(D) = \frac{1}{2}$$

$$\sin(E) = \frac{\sqrt{3}}{2}$$

$$\cos(D) = \frac{\sqrt{3}}{2}$$

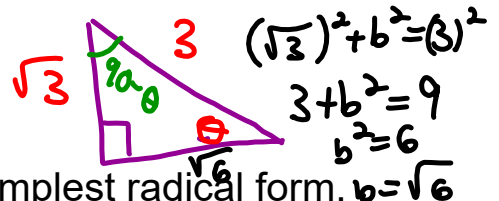
$$\tan(D) = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

rationalize when the square root is in denominator.



Ex. 3

In a given triangle, $\sin(\theta) = \frac{\sqrt{3}^{\text{opp}}}{3^{\text{hyp}}}$



Find the following values. Leave answers in simplest radical form. $b = \sqrt{6}$

$$\cos(\theta) = \frac{\sqrt{6}}{3}$$

$$\sin(90-\theta) = \frac{\sqrt{6}}{3}$$

$$\tan(\theta) = \frac{\sqrt{3}}{\sqrt{6}}$$

$$\cos(90-\theta) = \frac{\sqrt{3}}{3}$$

Rationalize

$$\frac{\sqrt{3}}{\sqrt{6}} = \frac{\sqrt{1}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

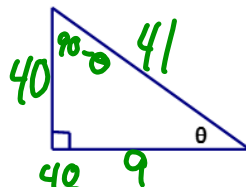
$$\tan(90-\theta) = \frac{\sqrt{6}}{\sqrt{3}} = \sqrt{2}$$

You try 1 and 5

1. Given the following trigonometric values, label the triangle's sides.

$$\sin \theta = \frac{40}{41} \quad \tan \theta = \frac{40}{9}$$

Handwritten notes: "opp" above 40, "hyp" below 41, "opp" above 40, "adj" below 9, "9/41" written vertically between the two equations.



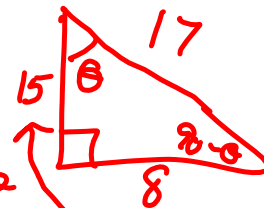
$$\sin(90-\theta) = \frac{9}{41} \quad \cos(90-\theta) = \frac{40}{41} \quad \tan(90-\theta) = \frac{40}{9}$$

5. Given $\sin \theta = \frac{8}{17}$

$$\cos \theta = \frac{15}{17} \quad \tan \theta = \frac{8}{15}$$

$$\sin(90-\theta) = \frac{15}{17} \quad \cos(90-\theta) = \frac{8}{17}$$

$$\tan(90-\theta) = \frac{15}{8}$$



$$8^2 + b^2 = 17^2$$

$$64 + b^2 = 289$$

$$b^2 = 225$$

$$b = 15$$

Understanding Check

If the $\cos(\theta) = 8/10$, find the following.

$$\tan(\theta) = \frac{6}{8} = \frac{3}{4}$$

$$\sin(\theta) = \frac{6}{10} = \frac{3}{5}$$

$$\sin(90-\theta) = \frac{8}{10} = \frac{4}{5}$$

