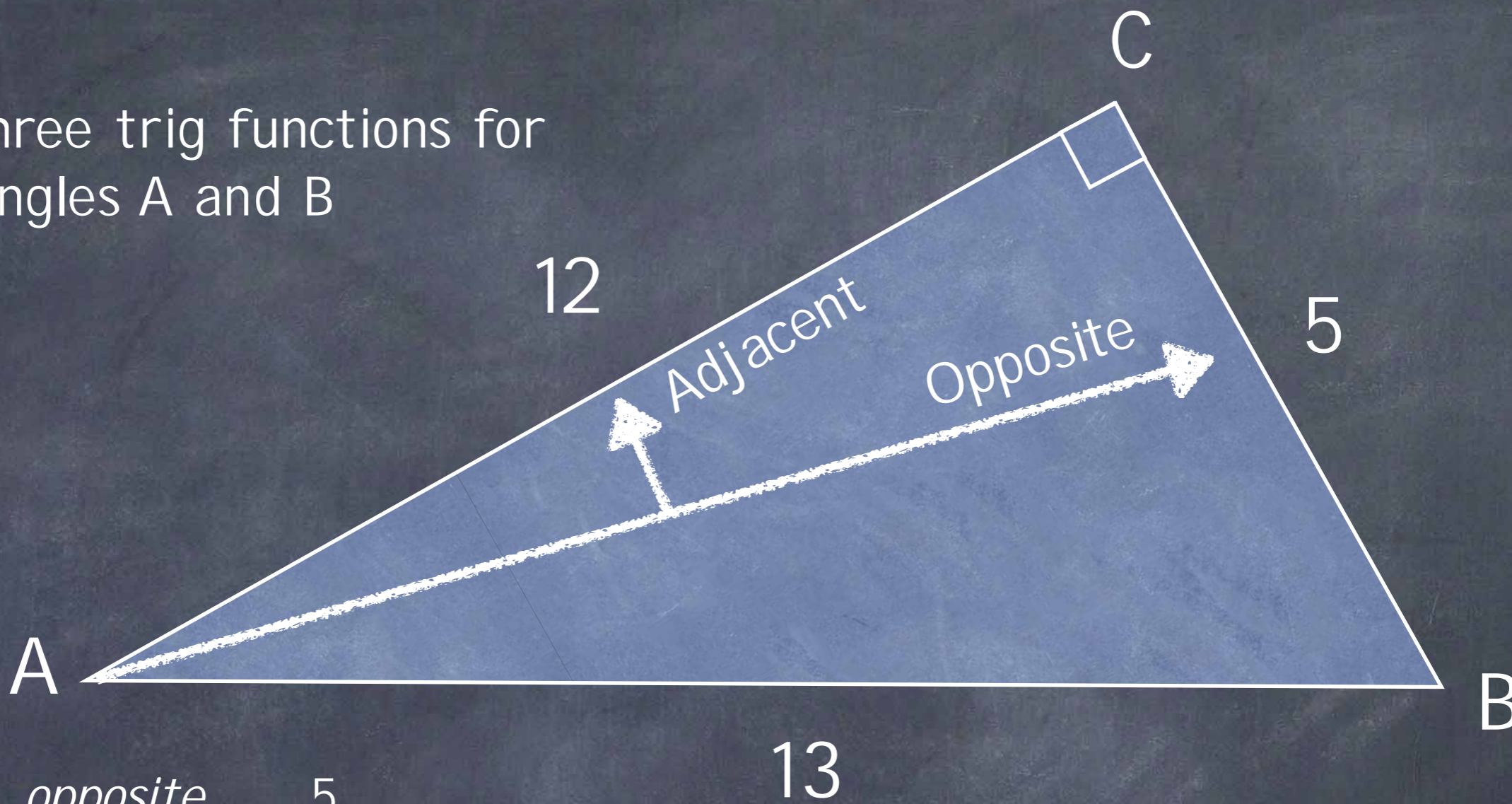


Using SOHCAHTOA The Tangent Ratio

Sine Opposite Hypotenuse Cosine Adjacent Hypotenuse Tangent Opposite Adjacent

Sine Opposite Hypotenuse
Cosine Adjacent Hypotenuse
Tangent Opposite Adjacent

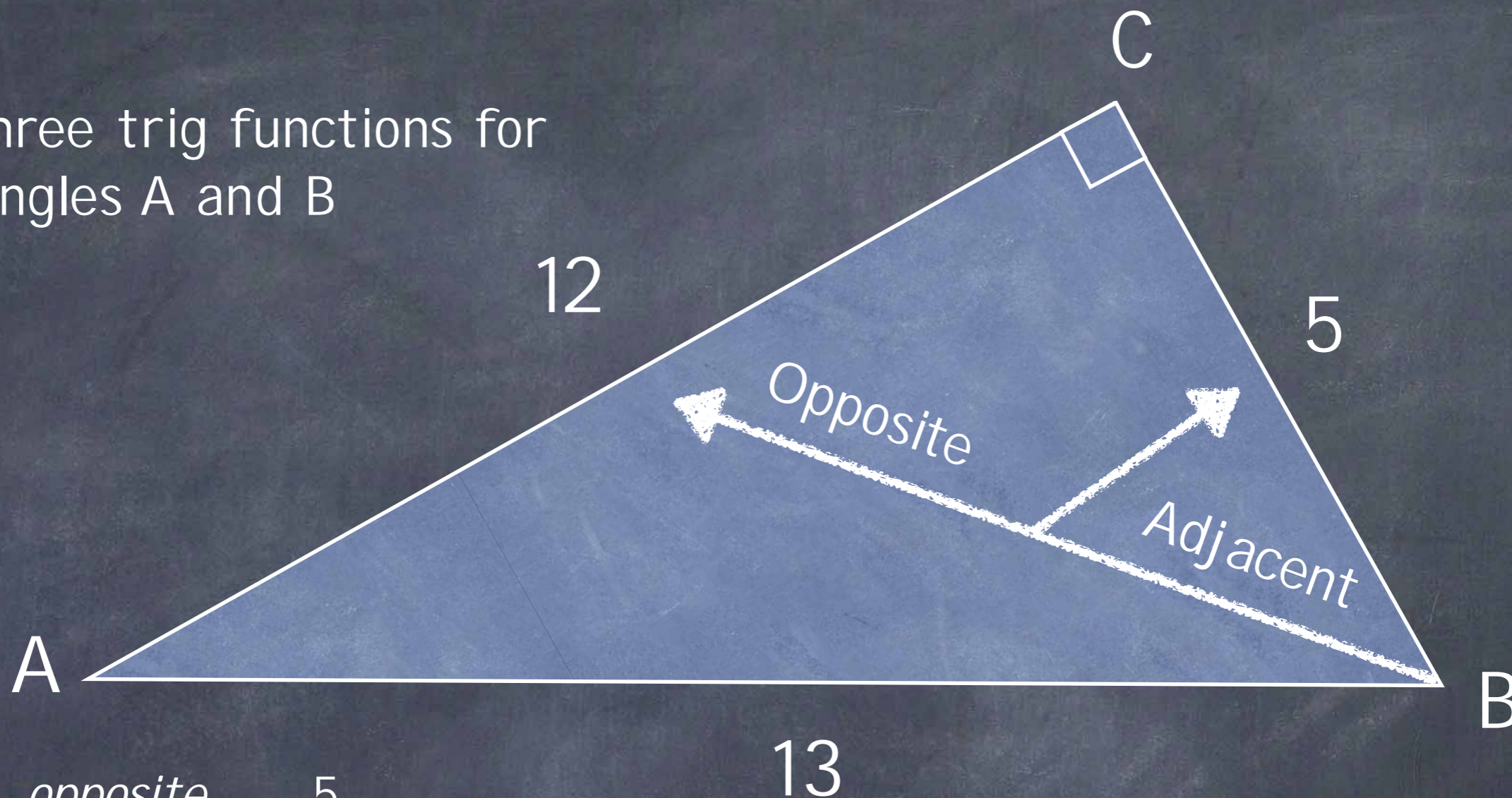
Find all three trig functions for angles A and B



$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{5}{12}$$

Sine Opposite Hypotenuse
Cosine Adjacent Hypotenuse
Tangent Opposite Adjacent

Find all three trig functions for angles A and B

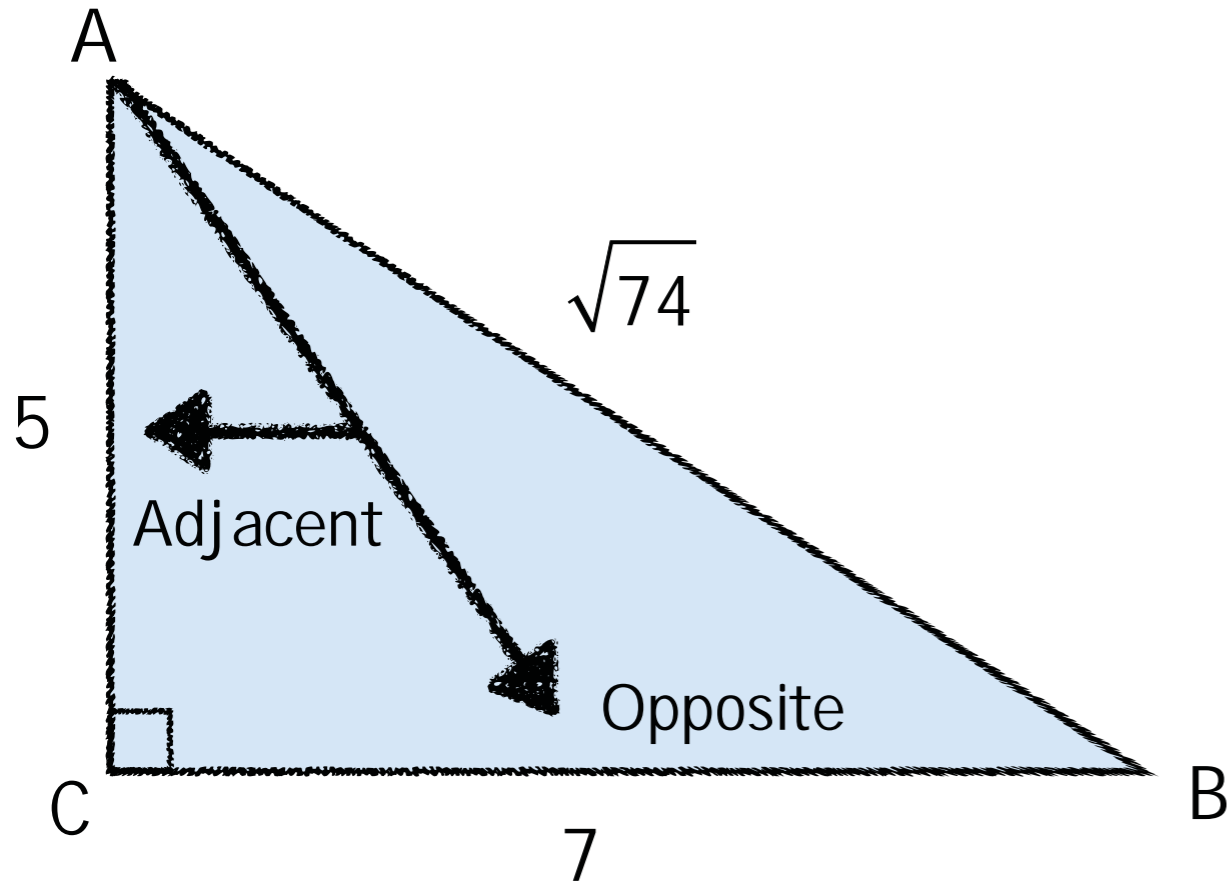


$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{5}{12}$$

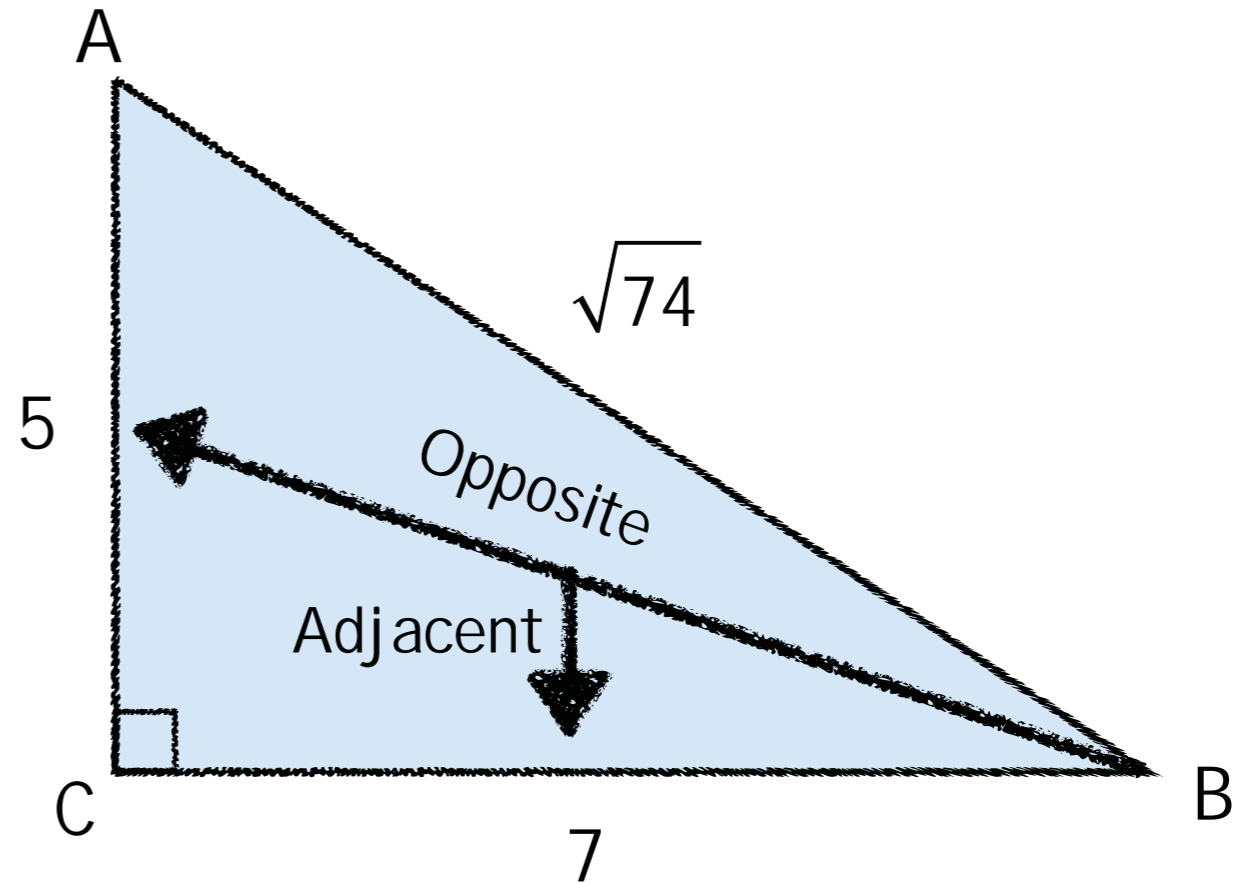
$$\tan B = \frac{12}{5}$$

Sine Opposite Hypotenuse
Cosine Adjacent Hypotenuse
Tangent Opposite Adjacent

Find the tangent of angles A and B



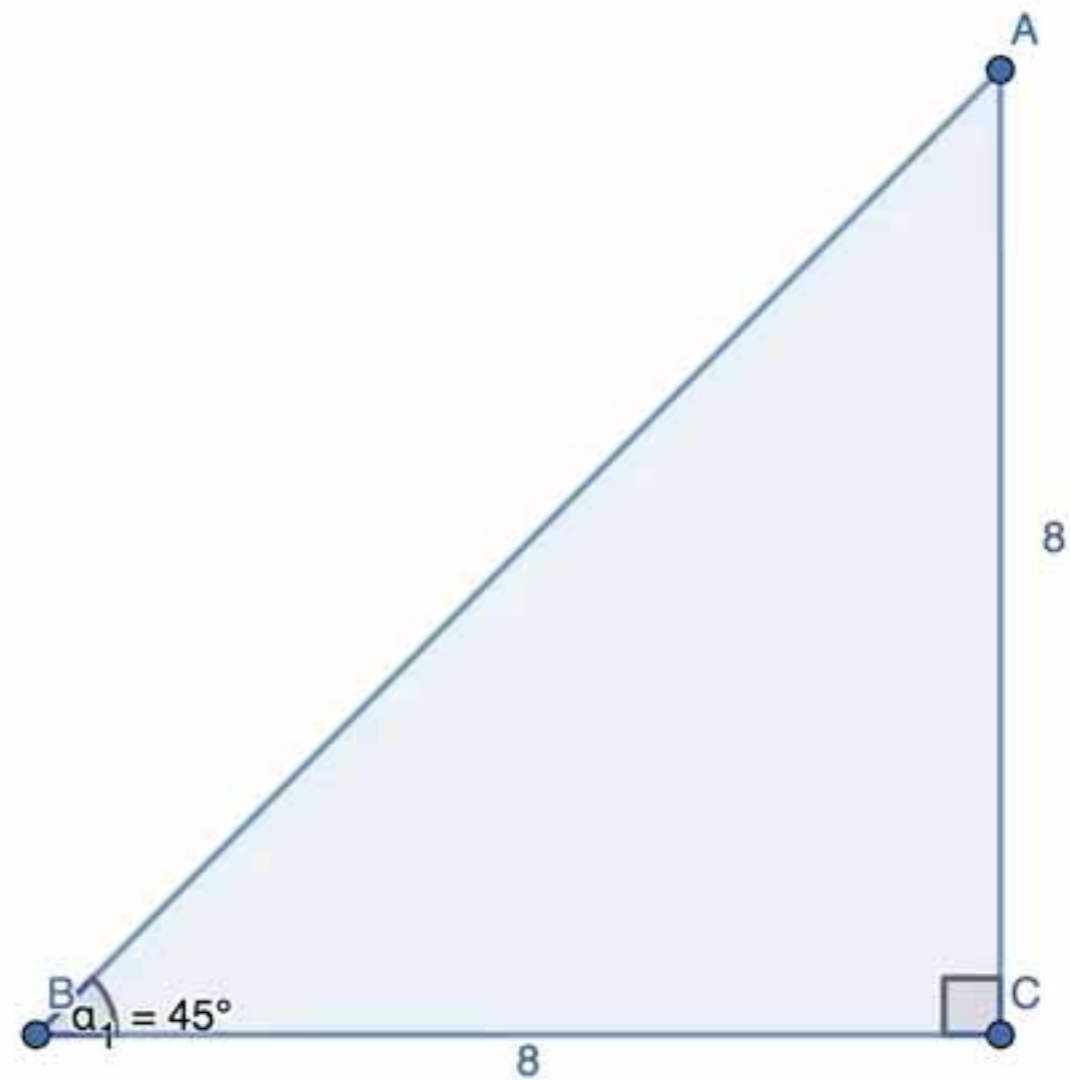
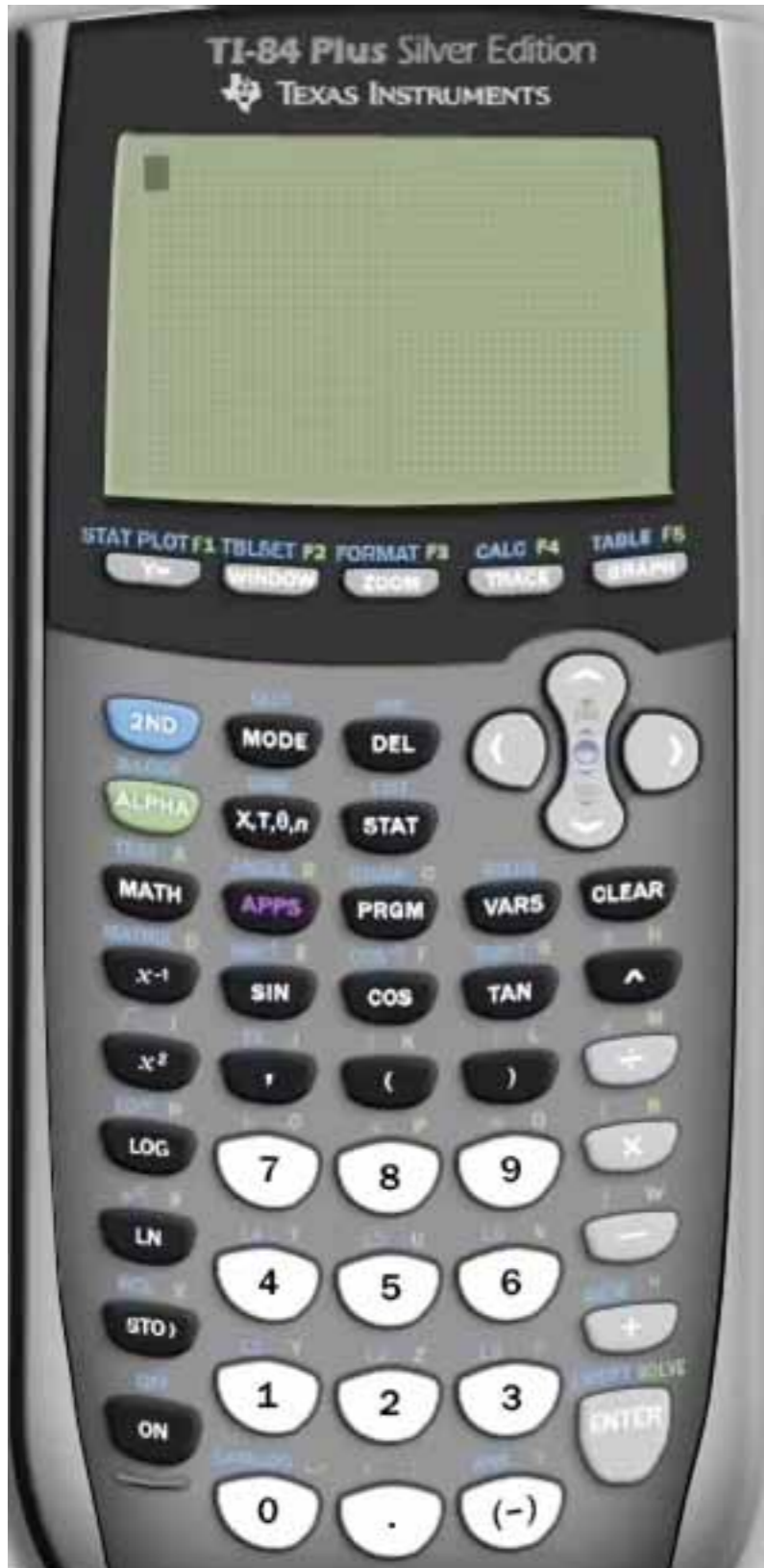
$$\tan A = \frac{\textit{opposite}}{\textit{adjacent}} = \frac{7}{5}$$



$$\tan B = \frac{5}{7}$$

Sine Opposite Hypotenuse Cosine Adjacent Hypotenuse Tangent Opposite Adjacent

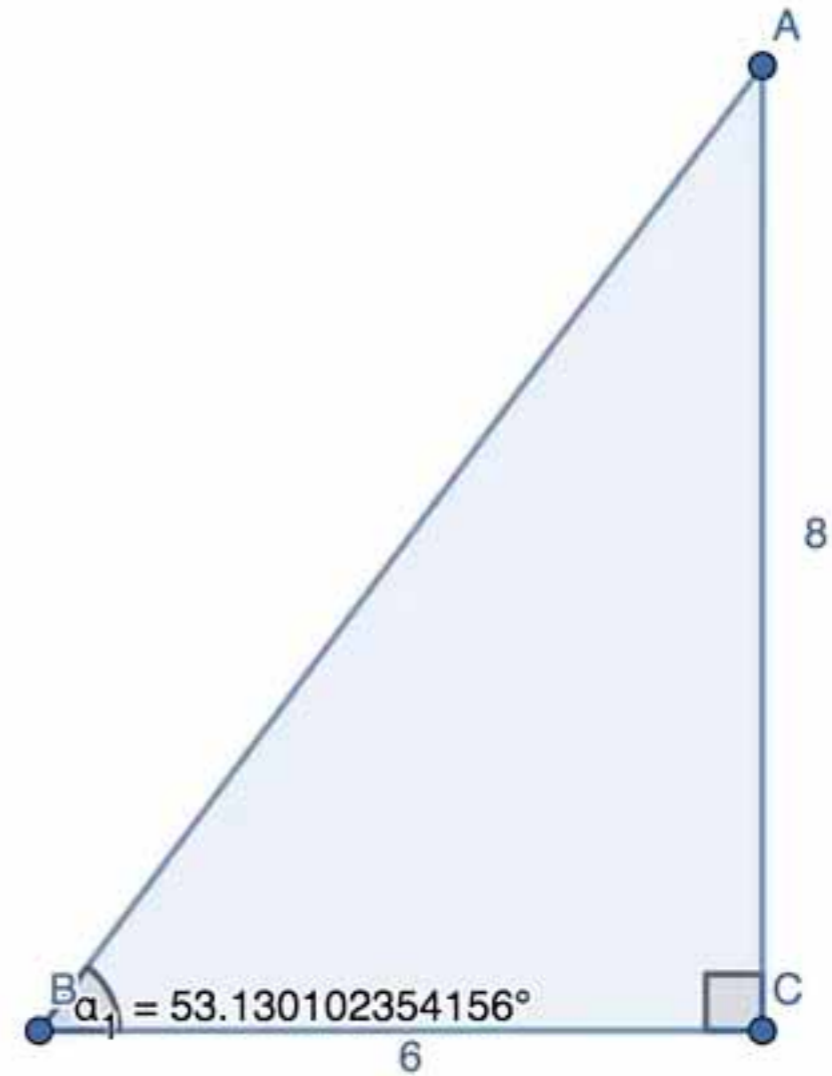
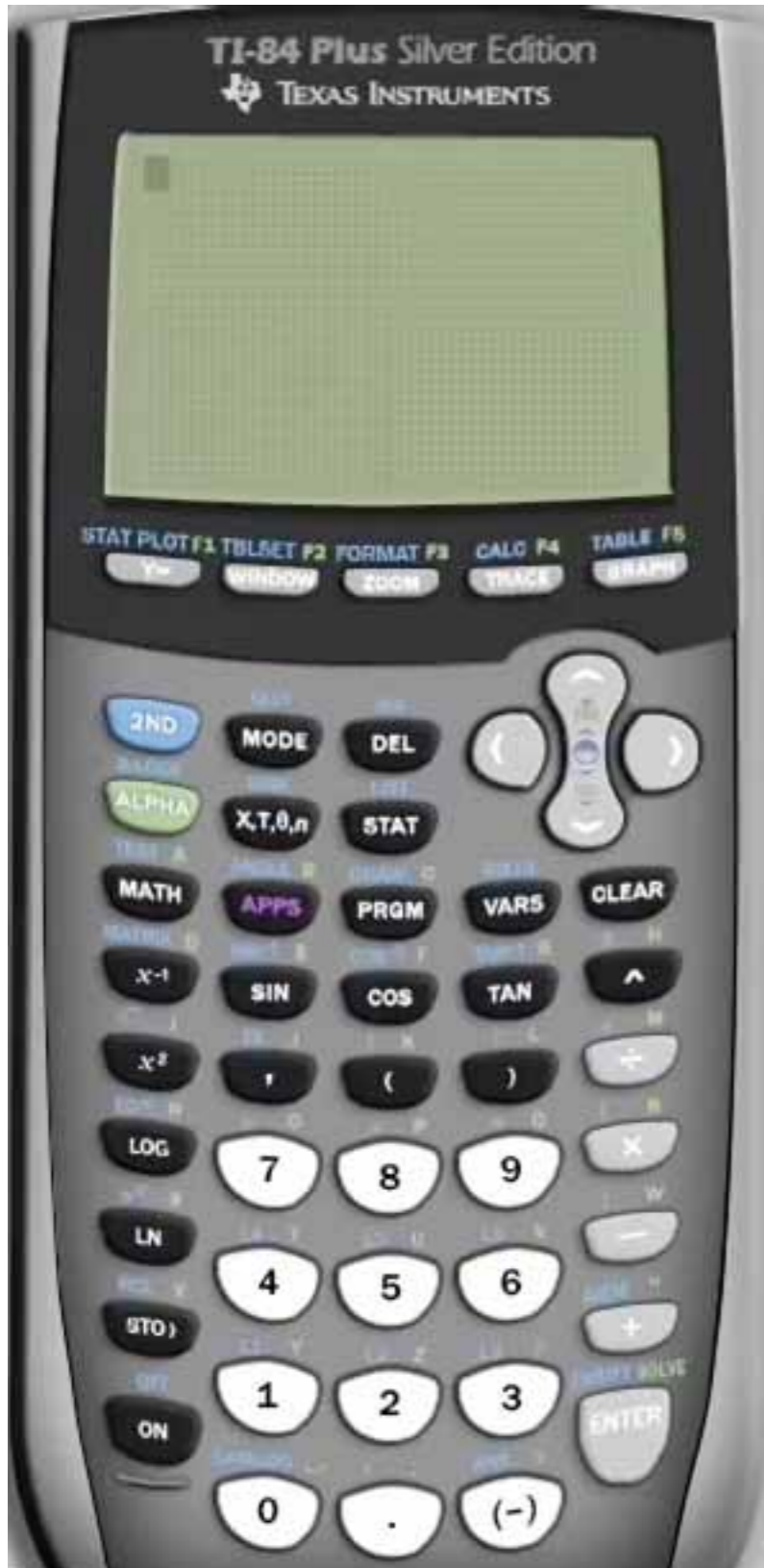
Note how the tangent ratio changes with the shape of the triangle



Tangent of $\alpha_1 = 1$

Sine Opposite Hypotenuse Cosine Adjacent Hypotenuse Tangent Opposite Adjacent

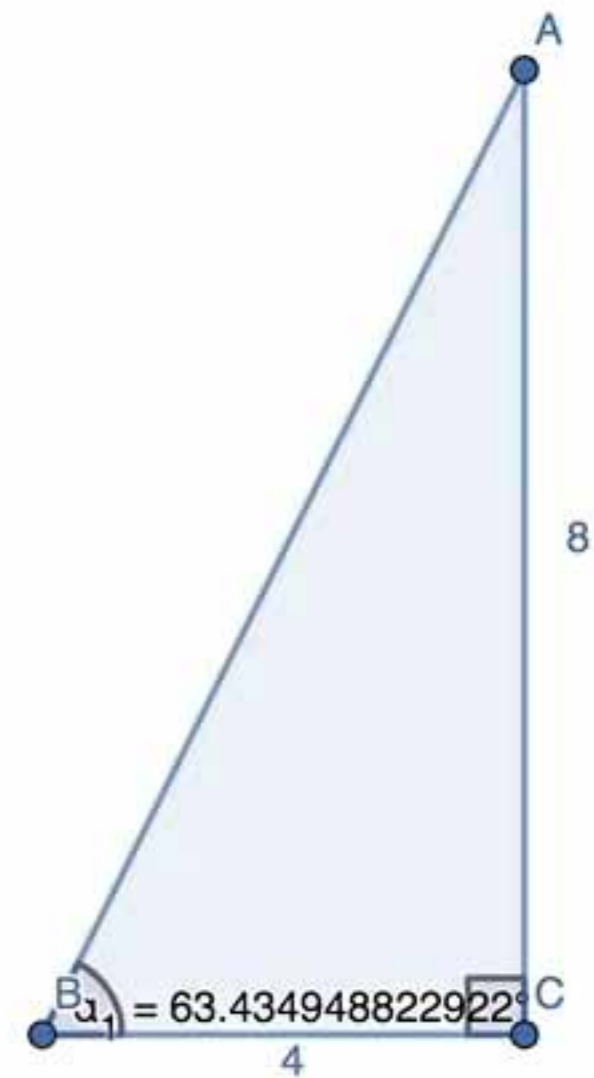
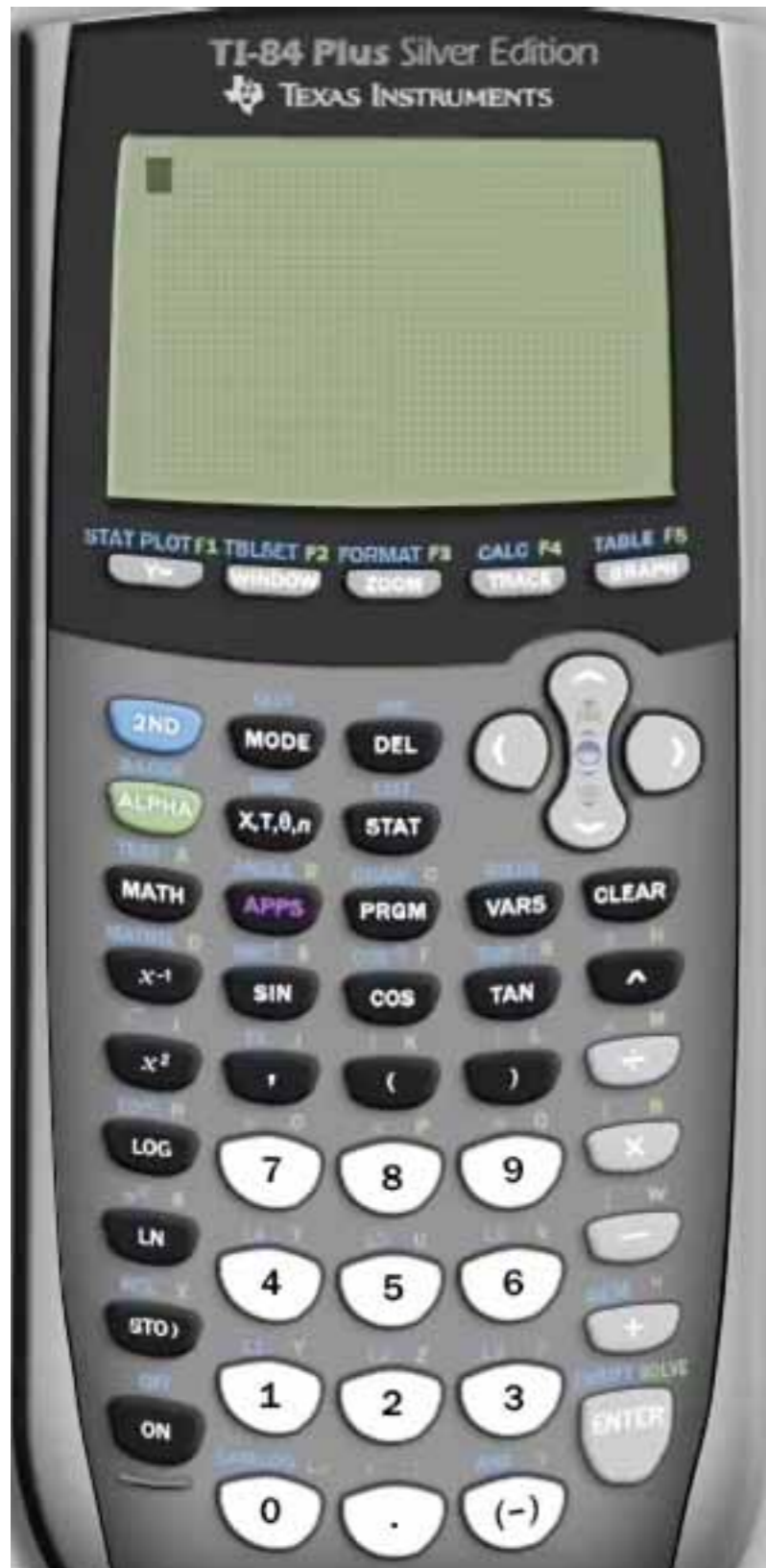
Note how the tangent ratio changes with the shape of the triangle



$$\text{Tangent of } \alpha_1 = 1.3333333333333$$

Sine Opposite Hypotenuse Cosine Adjacent Hypotenuse Tangent Opposite Adjacent

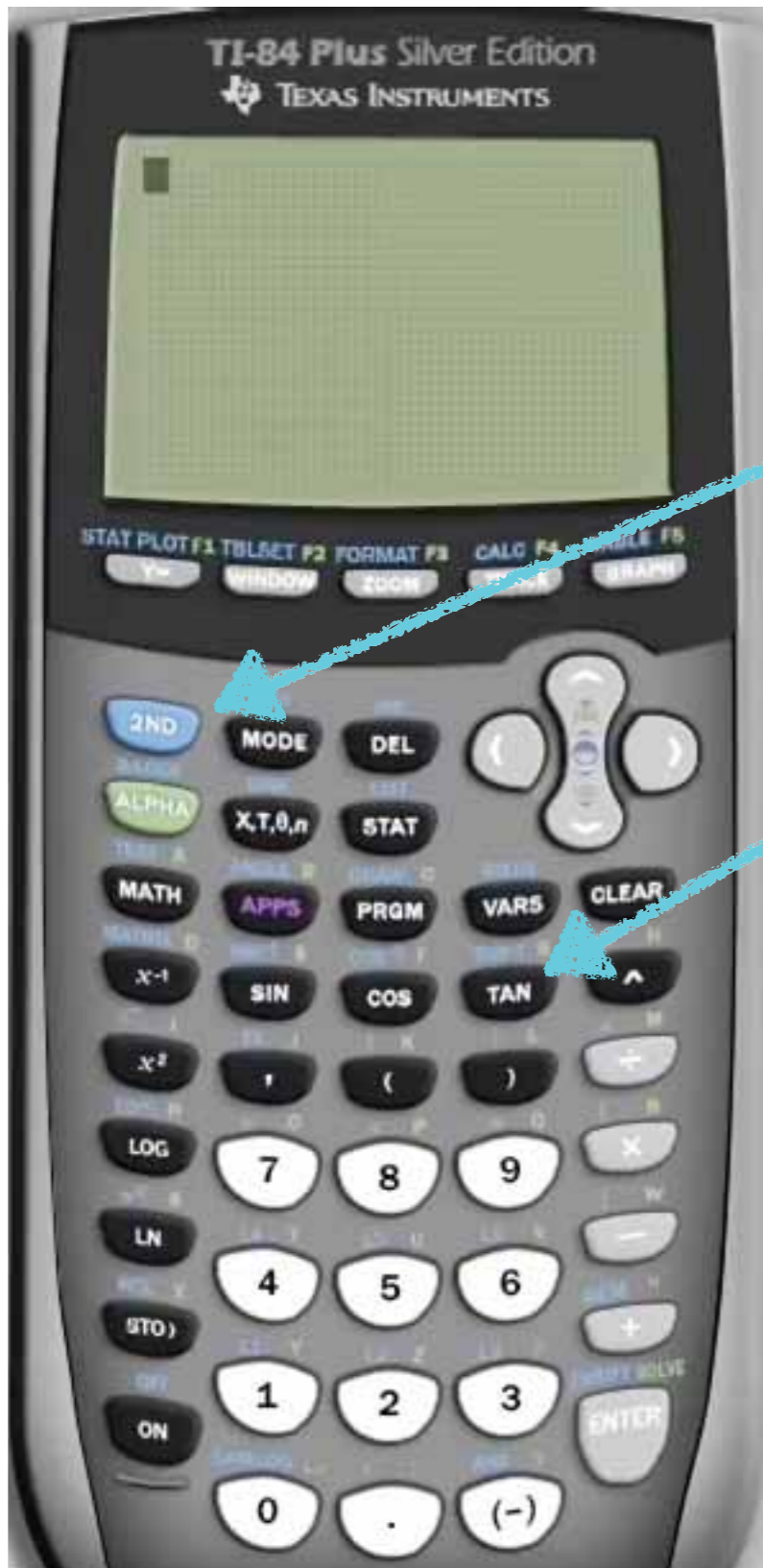
Note how the tangent ratio changes with the shape of the triangle



Tangent of $\alpha_1 = 2$

Sine Opposite Hypotenuse Cosine Adjacent Hypotenuse Tangent Opposite Adjacent

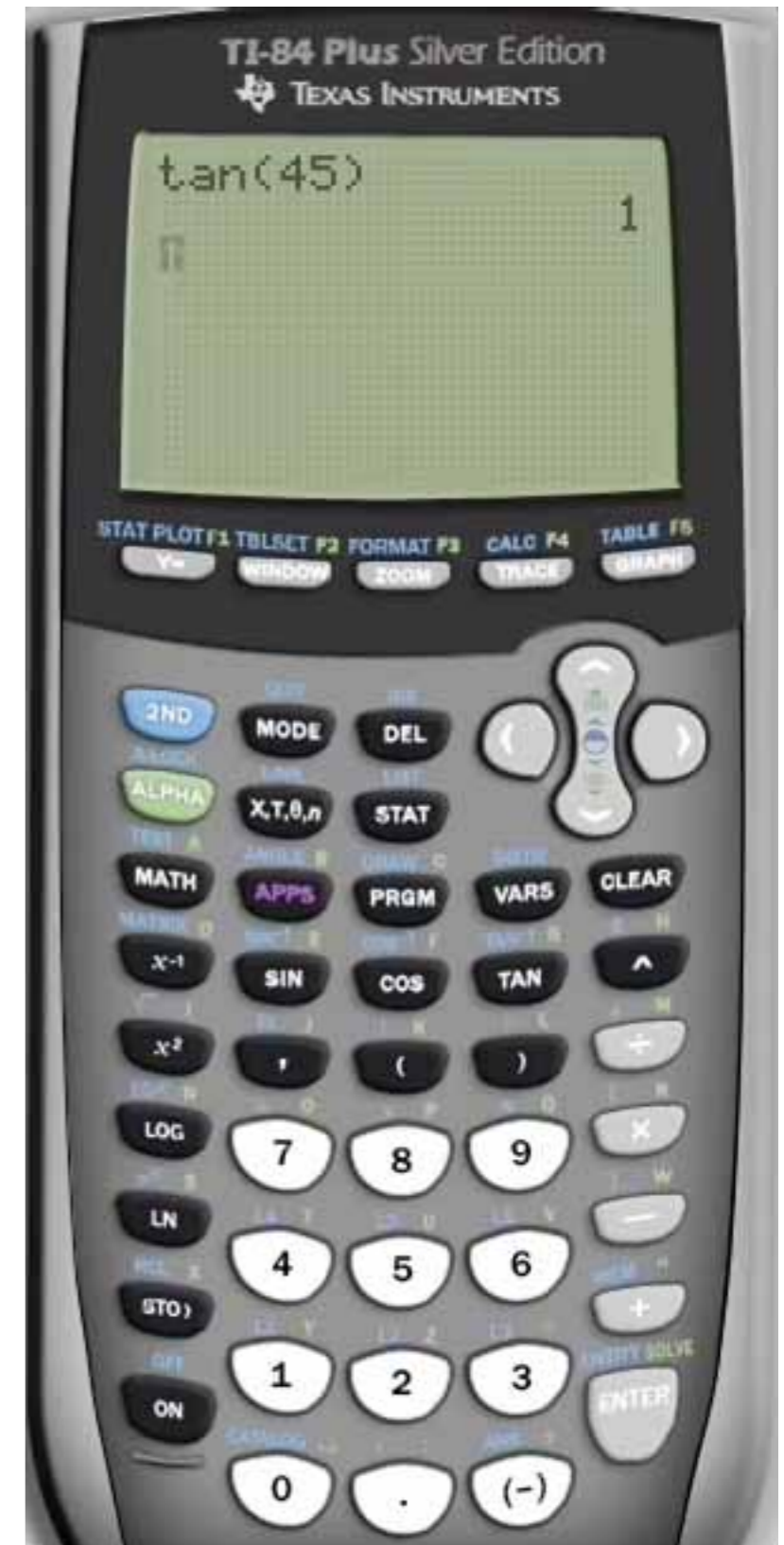
Note how \tan^{-1} finds the angle when you already know the tangent



Use the 2nd key to get the \tan^{-1} function. This finds the angle when you already know the tangent



To sum it up:
 $\tan(45^\circ) = 1$
and
 $\tan^{-1}(1) = 45^\circ$

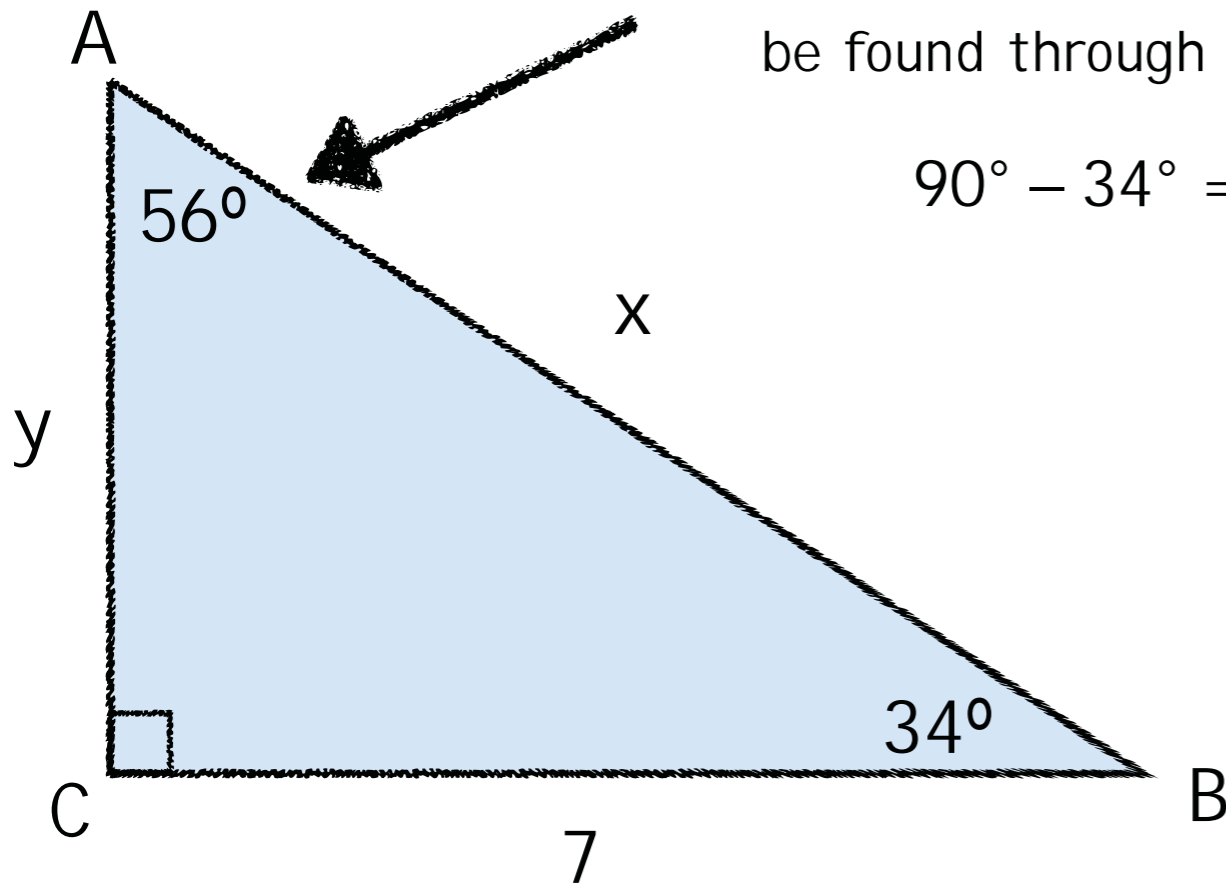


Sine Opposite Hypotenuse Cosine Adjacent Hypotenuse Tangent Opposite Adjacent

Find the missing lengths

Lets also note that this angle can be found through subtraction

$$90^\circ - 34^\circ = 56^\circ$$



$$\tan 34^\circ = \frac{y}{7}$$

$$7 \tan 34^\circ = y$$

$$y \approx 4.722$$

$$7^2 + y^2 = x^2$$

$$x = \sqrt{7^2 + y^2}$$

$$x \approx 8.444$$

