

Only 4 trig questions on the ACT.

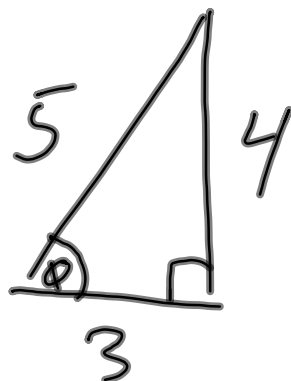
SOH CAH TOA

← refers to the sides of a right triangle

$$\text{Sine} = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\text{cosine} = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\text{tangent} = \frac{\text{Opposite}}{\text{Adjacent}}$$



calculate sine, cosine, tangent

$$\sin = \frac{4}{5}$$

$$\cos = \frac{3}{5}$$

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

$$\text{cosecant} = \frac{1}{\text{sine}}$$

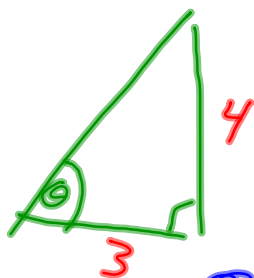
$$\text{secant} = \frac{1}{\text{cosine}}$$

$$\text{cotangent} = \frac{1}{\text{tangent}}$$

What is $\sin \theta$ if
 $\tan \theta = \frac{4}{3}$?

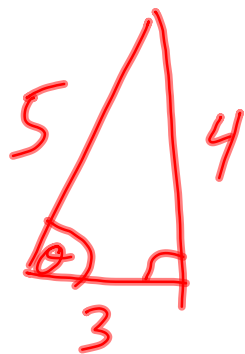
$\tan = \frac{4}{3}$ These are sides
of a right triangle

① Draw a right triangle



add the angle and the
sides of the tangent.

② $a^2 + b^2 = c^2$ the hypotenuse is 5



calculate the sine

$$\sin = \frac{4}{5}$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

Solve $\frac{\cos \theta}{\sin^2 \theta + \cos^2 \theta} = ?$

$$\sec \theta = \frac{25}{7} \quad \text{What is } \sin \theta?$$

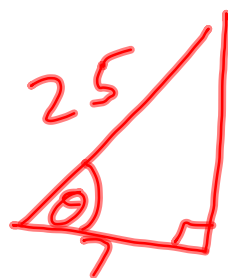
$$\sec = \frac{1}{\cosine} \quad \text{so substitute}$$

$$\frac{1}{\cosine} = \frac{25}{7} \quad \text{proportion}$$

$$7 = 25 \cdot \cosine \quad \cosine = \frac{7}{25}$$

Now put the sides in a right triangle:

$$\cos = \frac{7}{25}$$



Use pythagorean theorem

$$7^2 + b^2 = 25^2$$

$$49 + b^2 = 625$$

$$\sqrt{b^2} = \sqrt{576}$$

$$b = 24$$

$$\sin = \frac{24}{25}$$