Right triangle definitions of the 6 trig functions:

$\sin(\theta) = \frac{\text{opposite}}{\text{hypotenuse}}$

$\cos(\theta) = \frac{\text{adjacent}}{\text{hypotenuse}}$

$\tan(\theta) = \frac{\text{opposite}}{\text{adjacent}}$

$\csc(\theta) = \frac{1}{\sin(\theta)}$

$\sec(\theta) = \frac{1}{\cos(\theta)}$

$\cot(\theta) = \frac{1}{\tan(\theta)}$

Coordinate plane definitions of the basic 3 trig functions
θ is an angle in standard position; (a, b) is any point on its terminal side;
r is the distance from the origin to (x, y)
Then $r^2 = a^2 + b^2$

The 3 basic trig functions:

$\sin(\theta) = \frac{b}{r}$

$\cos(\theta) = \frac{a}{r}$

$\tan(\theta) = \frac{b}{a}$

Unit Circle definitions of the basic 3 trig functions

(a, b) is any point on the unit circle $a^2 + b^2 = 1$
Then x is the radian measure of a rotation which starts at $(1, 0)$ and ends at (a, b)
The 3 basic trig functions:

$\sin(\theta) = b$

$\cos(\theta) = a$

$\tan(\theta) = \frac{b}{a}$