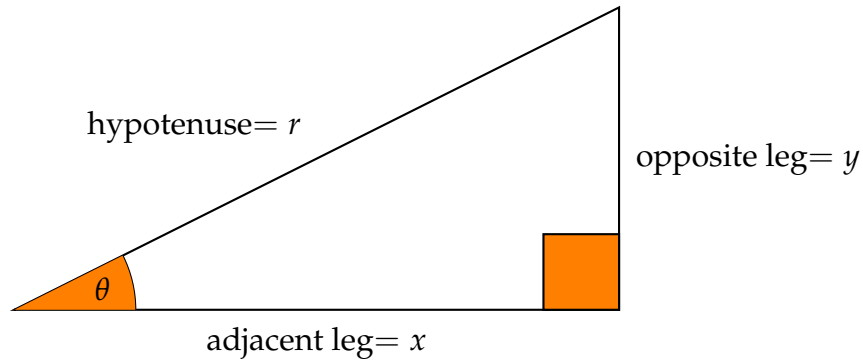


Purpose: In this problem set, you will use the trigonometric functions you are familiar with to build a full list of the trigonometric functions.

We will build our trigonometric functions using the triangle below.



As a full class, we'll collect the various trigonometric functions in the space below.

1. We have several identities that we get from the definitions of trig functions.

(a) Let's start with the equation of a circle centered at $(0,0)$ with radius r .

(b) Divide both sides by r^2 .

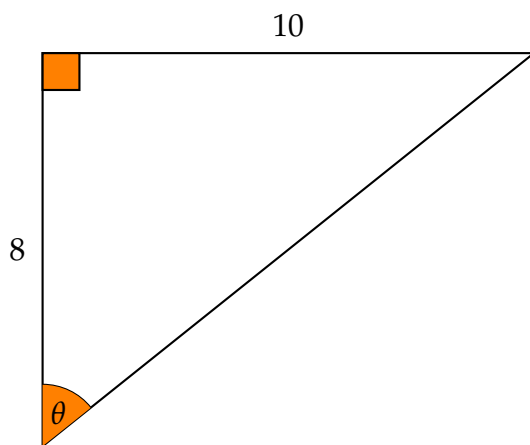
(c) Can you find a way to substitute the definitions of sine and cosine into your equation?
This is the first Pythagorean identity.

(d) There are two more Pythagorean identities involving trig functions. Try dividing the last equation by $(\cos(\theta))^2$, then simplify using other trig functions.

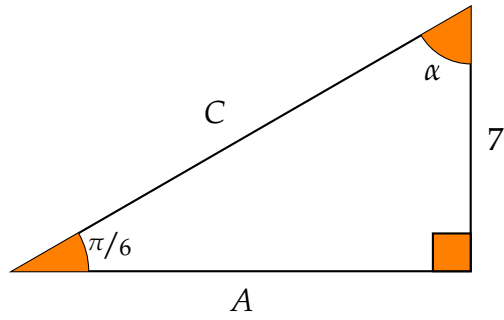
(e) Let's go back to the sine/cosine version. Now divide everything by $(\sin(\theta))^2$ and simplify.

Pythagorean Identities:

2. Consider the triangle below. Compute all six trig functions at θ .



3. Solve for the unknown sides and angles in the triangle below.



4. Find out everything you can about the triangle below.

