Vocabulary: Simplifying Trigonometric Expressions

dictionary2

**Vocabulary**

* Identity – an equation that is true for all values.
* A *trigonometric identity* is an equation involving trigonometric functions that is true for all possible angles.
  + The *Pythagorean identities* are:
    - sin2 *θ* + cos2 *θ* = 1
    - 1 + tan2 *θ* = sec2 *θ*
    - 1 + cot2 *θ* = csc2 *θ*
    - The *reciprocal identities* are:
      * sin *θ* =  cos *θ* =  tan *θ* = 
      * csc *θ* =  sec *θ* =  cot *θ* = 
* Trigonometric function – a function of an angle that relates the angles of a triangle to the lengths of its sides.
  + There are six trigonometric functions: sine, cosine, tangent, cotangent, secant, and cosecant.
  + The values of the trigonometric functions are determined by the point where an angle (*θ*) in standard position, placed on a unit circle, intersects the circle. In the diagram below, that point is labeled *P*(*x*, *y*).
  + The sine of *θ* (sin *θ*) is the *y*-value of the point (*x*, *y*). So, in the diagram, sin *θ*  = *y*.



* + The cosine of *θ* (cos *θ*) is the *x*-value of the point (*x*, *y*). So, in the diagram, cos *θ*  = *x*.
  + The tangent of *θ* (tan *θ*) is the ratio of the sine to the cosine. So, tan *θ* = .
  + The cotangent (cot *θ*), cosecant (csc *θ*), and secant (sec *θ*) are reciprocals of the other functions.

cot *θ* =  =  csc *θ* =  sec *θ* = 