**4.3 Right Triangle Trigonometry**

**Objective: Evaluate trig functions of acute angles and use fundamental trig identities while solving real-life problems**

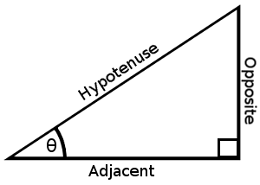
**Right Triangle Definitions of Trigonometric Functions**

Let be an acute angle of a right triangle. The six trig functions of angle are defined:

*Cosine, sine, tangent, secant, cosecant, cotangent*

Note: Notes second row is just the reciprocal of the corresponding function in the first row.

The abbreviations above: opp, adj, hyp represent the lengths of the sides of the right triangle (as seen in the picture)

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opp = length of side opposite

adj = length of side adjacent to

hyp = length for of hypotenuse

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Example:

Evaluate the 6 trigonometric functions for each real number.

**Fundamental Trigonometric Identities**

*Reciprocal Identities*

*Quotient Identities*

*Pythagorean Identities*

**Examples:**

Let be an acute angle such that sin . Find the value of:

1. cos
2. tan tan

**tan**

**Applications to Real Life**

1. You’re standing just down the street from the 478 foot tall Woodmen Building in downtown Omaha. The measure of the angle of elevation from where you are standing to the top of the Woodmen building is 68.. How far away from the building are you standing?

tan 68.

**x = 189.25 feet**

1. A historic lighthouse is 200 yards directly south from a bike path along a lake. A walk way to the lighthouse is 400 yards long. Find the acute angle between the bike path and the walkway.

Note: path is adjacent, walk way is hypotenuse, and 200 yards is opposite

This is true at 30

**Homework**

Pg 306 #1, 5-6, 31-32, 37-39, 47-49, 57-58, 63-64, 67, 71