Course Number
Instructor
Date

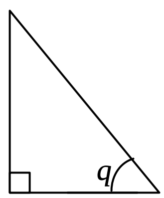
Section 4.3 Right Triangle Trigonometry

Objective: In this lesson you learned how to evaluate trigonometric functions of acute angles and how to use the fundamental trigonometric identities.

I. The Six Trigonometric Functions (Pages 279–281)

What you should learn How to evaluate trigonometric functions of acute angles

In the right triangle shown below, label the three sides of the triangle relative to the angle labeled q as (a) the **hypotenuse,** (b) the **opposite side,** and (c) the **adjacent side.**



Let q be an acute angle of a right triangle. Define the six trigonometric functions of the angle q using opp = the length of the side opposite q, adj = the length of the side adjacent to q, and hyp = the length of the hypotenuse.

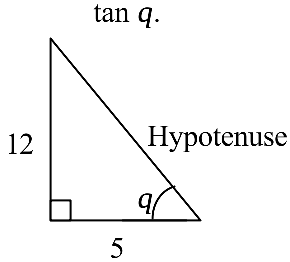
sin q = ____________ cos q = ____________

tan q = ____________ csc q = ____________

sec q = ____________ cot q = ____________

The cosecant function is the reciprocal of the _______________ function. The cotangent function is the reciprocal of the ________________ function. The secant function is the reciprocal of the ________________ function.

Example : In the right triangle below, find sin q, cos q, and tan q.



Give the sines, cosines, and tangents of the following special angles:

$\sin 30^\circ = \sin \frac{p}{6} =$ ______________________________

$\cos 30^\circ = \cos \frac{p}{6} =$ ______________________________

$\tan 30^\circ = \tan \frac{p}{6} =$ ______________________________

$\sin 45^\circ = \sin \frac{p}{4} =$ ______________________________

$\cos 45^\circ = \cos \frac{p}{4} =$ ______________________________

$\tan 45^\circ = \tan \frac{p}{4} =$ ______________________________

$\sin 60^\circ = \sin \frac{p}{3} =$ ______________________________

$\cos 60^\circ = \cos \frac{p}{3} =$ ______________________________

$\tan 60^\circ = \tan \frac{p}{3} =$ ______________________________

Cofunctions of complementary angles are ______________. If q is an acute angle, then:

$\sin(90^\circ - q) =$ __________ $\cos(90^\circ - q) =$ __________

$\tan(90^\circ - q) =$ __________ $\cot(90^\circ - q) =$ __________

$\sec(90^\circ - q) =$ __________ $\csc(90^\circ - q) =$ __________

II. Trigonometric Identities (Pages 282–283)

What you should learn
How to use the fundamental trigonometric identities

List six reciprocal identities:

1)

2)

3)

4)

5)

6)

List two quotient identities:

1)

2)

List three Pythagorean identities:

1)

2)

3)

IV. Applications Involving Right Triangles (Pages 284–285)

What you should learn
How to use trigonometric functions to model and solve real-life problems

What does it mean to "solve a right triangle?"

The term **angle of elevation** means . . .

The term **angle of depression** means . . .