

Right-Triangle Definitions of the Trigonometric Functions

$$\sin A = \frac{y}{r} = \frac{\text{side opposite}}{\text{hypotenuse}}$$

$$\csc A = \frac{r}{y} = \frac{\text{hypotenuse}}{\text{side opposite}}$$

$$\cos A = \frac{x}{r} = \frac{\text{side adjacent}}{\text{hypotenuse}}$$

$$\sec A = \frac{r}{x} = \frac{\text{hypotenuse}}{\text{side adjacent}}$$

$$\tan A = \frac{y}{x} = \frac{\text{side opposite}}{\text{side adjacent}}$$

$$\cot A = \frac{x}{y} = \frac{\text{side adjacent}}{\text{side opposite}}$$

Cofunction Identities

$$\sin A = \cos(90^\circ - A) \quad \cos A = \sin(90^\circ - A)$$

$$\tan A = \cot(90^\circ - A) \quad \cot A = \tan(90^\circ - A)$$

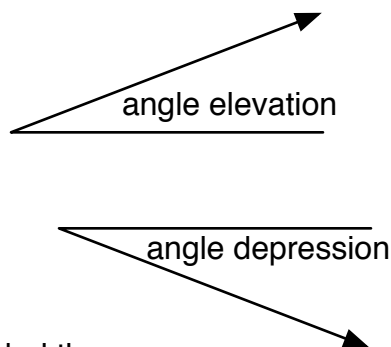
$$\sec A = \csc(90^\circ - A) \quad \csc A = \sec(90^\circ - A)$$

Trigonometric Functions of Non-Acute Angles

In Quadrant	θ' Is
I	θ
II	$180^\circ - \theta$
III	$\theta - 180^\circ$
IV	$360^\circ - \theta$

Finding Trig Function Values for Any Angle

1. Add or subtract 360° as many times as needed to get an angle of at least 0° but less than 360°
2. Find the reference angle, θ' .
3. Find the trig function values for θ' .
4. Determine the correct signs for the values found in step 3 using CAST.



Know all the function values for the special reference angles (30, 45, 60) and quadrantal angles (0, 90, 180, 270)

Solving Applied Trigonometry Problems

1. Draw a sketch and label it with the given information. Label the quantity to be found with a variable.
2. Use the sketch to write an equation relating the given quantities to the variable.
3. Solve the equation and check that your answer makes sense.

Name: _____

Date: _____

Period: _____

Trigonometry: Chapter 2 Review

1. Evaluate each of the following trig expressions. Round all expressions to four decimal places.

a. $\tan 87^\circ 20' =$ _____ b. $\sin 88^\circ 10' =$ _____ c. $\csc 17^\circ 30' =$ _____

d. $\cos 122^\circ =$ _____ e. $\sec 112^\circ =$ _____ f. $\cot 310^\circ 30' =$ _____

2. Refer to right triangle ABC, where $C = 90^\circ$. Find all missing pieces. Round all angles and lengths to the nearest tenth.

a. $c = 30 \text{ ft}$ $b = 24 \text{ ft}$	b. $a = 23.2 \text{ m}$ $b = 15.3 \text{ m}$	c. $A = 61^\circ$ $b = 18 \text{ in}$
d. $B = 72^\circ$ $b = 102 \text{ cm}$	e. $B = 62^\circ 53'$ $c = 74.37 \text{ yd}$	f. $B = 55^\circ 40'$ $a = 1.6 \text{ in}$

3. Solve for θ . Round all angles to the nearest minute.

a. $\sin \theta = 0.3907$ b. $\cos \theta = 0.9136$ c. $\tan \theta = 3.0237$

$\theta =$ _____ $\theta =$ _____ $\theta =$ _____

4. Solve for θ . Round all angles to the nearest tenth of a degree.

a. $\sec \theta = 5.9963$ b. $\csc \theta = 3.9175$ c. $\cot \theta = 1.5211$

$\theta =$ _____ $\theta =$ _____ $\theta =$ _____

5. Use the Cofunction Theorem to fill in the blanks.

a. $\sin 43.9^\circ =$ _____ b. $\csc 42^\circ 14' =$ _____ c. $\cot 22.26^\circ =$ _____

6. Fill in the table of exact values:

θ	0°	30°	45°	60°	90°
$\sin \theta$					
$\cos \theta$					
$\tan \theta$					

7. Use the table of values to simplify each expression.

$a. \sin^3 30^\circ$ $b. \cos 45^\circ - \sin 60^\circ$ $c. \tan^2 45^\circ + \sec 30^\circ$ $d. \cot^2 60^\circ - \sin 30^\circ$

8. A person stands five meters from a building. The angle of elevation from where the person stands to the top of the building is 75° . Find the height of the building. Round to the nearest meter.

9. The angle of depression from the top of a cliff 800 meters high to the base of a log cabin is $37^\circ 20'$. How far is the cabin from the foot of the cliff?

10. A person standing 100 inches from a mirror notices that the angle of depression from her eyes to the bottom of the mirror is 20° , while the angle of elevation to the top of the mirror is 29° . Find the vertical dimensions of the mirror.

11. A boat travels on a course for 301 miles north and 234 miles east. What is the bearing that boat has traveled?