

1. As a plane flies over East Leyden (2.5 miles away), The angle of elevation to the plane is  $72^{\circ}$ . How high up is the plane?
2. Godzilla is 400 ft tall. If the angle of elevation to the top of his head is  $48^{\circ}$  from where you stand, how far away is Godzilla?
3. Superman is flying at an altitude of 1,000 ft. He looks and sees Dr. Evil at an angle of declension (angle of depression) of  $73^{\circ}$ . How far is Superman from Dr. Evil?
4. If the angle of elevation to the sun is  $20^{\circ}$ , and a man casts a 7ft shadow, How tall is he (in feet and inches?).
5. Jamie flies a kite at an angle of elevation of  $48^{\circ}$ . If she has let out 60 ft of string, how high is the kite?
6. A statue of Mickey Mouse is at the top of a cliff. Bob, standing 100 feet from the cliff notes the angle of elevation to the top of the cliff is  $37^{\circ}$ , and the angle of elevation to the top of the statue is  $43^{\circ}$ . How tall is the statue?
7. A giant bird lands on the top of a telephone pole. You are standing 10 feet from the bottom of the pole, and the angle of elevation to the top of the pole is  $67^{\circ}$ . The angle of elevation to the top of the bird is  $71^{\circ}$ . How tall is the bird?
8. From the top of your house, the angle of declension to the close side of the street is  $80^{\circ}$ . The angle of declension to the far side of the street is  $76^{\circ}$ . If your house is 20 ft high, how wide is the street?

## Alternate trig functions.

In addition to sine (sin), cosine (cos), and tangent (tan), there are other trigonometric functions.

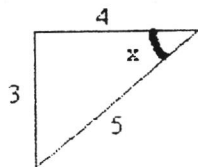
Cosecant (csc) is the reciprocal of Sine  $\longrightarrow \text{csc} = \frac{\text{hypotenuse}}{\text{opposite}} = \frac{1}{\sin}$

Secant (sec) is the reciprocal of Cosine  $\longrightarrow \text{sec} = \frac{\text{hypotenuse}}{\text{adjacent}} = \frac{1}{\cos}$

Cotangent (cot) is the reciprocal of Tangent  $\longrightarrow \text{cot} = \frac{\text{adjacent}}{\text{opposite}} = \frac{1}{\tan}$

Identify the csc, sec, and cot for angle  $x$  in each of the following triangles

9.

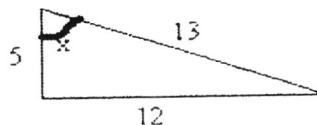


$$\text{csc } x =$$

$$\text{sec } x =$$

$$\text{cot } x =$$

10.

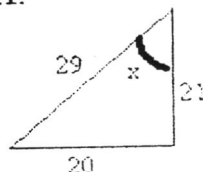


$$\text{csc } x =$$

$$\text{sec } x =$$

$$\text{cot } x =$$

11.

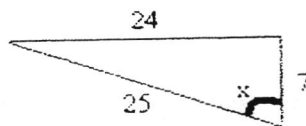


$$\text{csc } x =$$

$$\text{sec } x =$$

$$\text{cot } x =$$

12.



$$\text{csc } x =$$

$$\text{sec } x =$$

$$\text{cot } x =$$