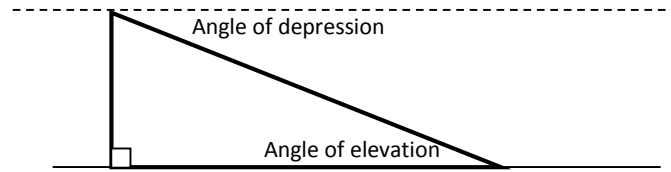


Unit 5 Lesson 4 – Using Trig Functions to solve angle of elevation/depression

Note that angles of depression and elevation are measured from a _____ line. Also, because they are alternate interior angles of parallel lines they are _____.



Ex.1 At a certain time of day the angle of elevation of the sun is 44° . Find the length of the shadow cast by a building 30 meters high.

Picture:

Write an Equation: _____

Solution: _____

Ex 2: A 20-foot ladder leans against a wall so that the base of the ladder is 8 feet from the base of the building. What is the ladder's angle of elevation?

Picture:

Write an Equation: _____

Solution: _____

Ex 3: At a point on the ground 50 feet from the foot of a tree, the angle of elevation to the top of the tree is 53° . Find the height of the tree.

Picture:

Write an Equation: _____

Solution: _____

Ex 4: A 50-meter vertical tower is braced with a cable secured at the top of the tower and tied 30 meters from the base. What is the angle of depression from the top of the tower to the point on the ground where the cable is tied?

Picture:

Write an Equation: _____

Solution: _____

Ex 5: From the top of a lighthouse 210 feet high, the angle of depression of a boat is 27° . Find the distance from the boat to the foot of the lighthouse. The lighthouse was built at sea level.

Picture:

Write an Equation: _____

Solution: _____

Ex 6: A person at one end of a 230-foot bridge spots the river's edge directly below the opposite end of the bridge and finds the angle of depression to be 57° . How far below the bridge is the river?

Picture:

Write an Equation: _____

Solution: _____

Unit 5 Lesson 4 Practice – Using Trig Functions to solve angle of elevation/depression

1. An escalator from the ground floor to the second floor of a department store is 110 ft long and rises 32 ft. vertically. What is the escalator's angle of elevation?

Picture:

Write an Equation: _____

Solution: _____

2. A ladder on a fire truck has its base 8 ft. above the ground. The maximum length of the ladder is 100 ft. If the ladder's greatest angle of elevation possible is 70° , what is the highest above the ground that it can reach?

Picture:

Write an Equation: _____

Solution: _____

3. A person in an apartment building sights the top and bottom of an office building 500 ft. away. The angle of elevation for the top of the office building is 23° and the angle of depression for the base of the building is 50° . How tall is the office building?

Picture:

Write an Equation: _____

Solution: _____

4. Electronic instruments on a treasure-hunting ship detect a large object on the sea floor. The angle of depression is 29° , and the instruments indicate that the direct-line distance between the ship and the object is about 1400 ft. About how far below the surface of the water is the object, and how far must the ship travel to be directly over it?

Picture:

Write an Equation: _____

Solution: _____

5. A radio tower 200 ft. high casts a shadow 75 ft. long. What is the angle of elevation of the sun?

Picture:

Write an Equation: _____

Solution: _____

6. The angle of elevation from a car to a tower is 32° . The tower is 150 ft. tall. How far is the car from the tower?

Picture:

Write an Equation: _____

Solution: _____