

### Angles of Depression and Elevation

1. From a point 115 feet from the base of a redwood tree, the angle of elevation to the top of the tree is  $64.3^\circ$ . Find the height of the tree to the nearest foot.
2. From a point 10 feet from the base of a flag pole, the angle of elevation to the top of the flag pole is  $67.4^\circ$ . Find the height of the flag pole to the nearest foot.
3. DME (Distance Measuring Equipment) is standard avionic equipment on a commercial airplane. This equipment measures the distance from a plane to a radar station. If the distance from a plane to a radar station is 160 miles and the angle of depression is  $33^\circ$ , find the number of ground miles from a point directly below the plane to the radar station.
4. If the distance from a helicopter to a tower is 300 feet and the angle of depression is  $40.2^\circ$ , find the distance on the ground from a point directly below the helicopter to the tower.
5. A backpacker notes that from a certain point on level ground, the angle of elevation to a point at the top of a tree is  $34^\circ$ . After walking 50 closer to the tree, the backpacker notes that the angle of elevation is  $54^\circ$ . Find the height of the tree.
6. The angle of elevation from a point 116 meters from the base of the Eiffel Tower to the top of the Tower is  $68.9^\circ$ . Find the approximate height of the tower.
7. A submarine traveling 9 mph is descending at an angle of depression of  $5^\circ$ . How many minutes does it take the submarine to reach a depth of 80 feet?
8. The angle of depression of one side of a lake, measured from a balloon 2500 feet above the lake is  $43^\circ$ . The angle of depression to the opposite side of the lake is  $27^\circ$ . Find the width of the lake.
9. From a point A on a line from the base of the Washington Monument, the angle of elevation to the top of the monument is  $42^\circ$ . From a point 100 feet away and on the same line, the angle to the top is  $37.8^\circ$ . Find the approximate height of the Washington Monument.
10. The angle of elevation to the top of the Egyptian pyramid Cheops is  $36.4^\circ$ , measured from a point 350 feet from the base of the pyramid. The angle of elevation of a face of the pyramid is  $51.9^\circ$ . Find the height of Cheops.