Precalculus

Right Triangle Applications

1. The two equal sides of an isosceles triangle are each 42 cm. If the base measures 30cm, find the height and the measure of the two equal angles.
2. An equilateral triangle has an altitude of 4.3 inches. Find the length of the sides.
3. The diagonal of a rectangle is 348mm, while the longer side is 278mm. Find the shorter side of the rectangle and the angles the diagonal makes with the sides.
4. How long should an escalator be if it is to make an angle of 33⁰ with the floor and carry people a vertical distance of 21 ft between floors?
5. A 72.5 rope from the top of a circus tent pole is anchored to the ground 43.2 ft form the bottom of the pole. What angle does the rope make with the pole?
6. A person standing 150cm from a mirror notices that the angle of depression from his eyes to the bottom of the mirror is 12⁰, while the angle of elevation to the top of the mirror is 11⁰. Find the vertical dimension of the mirror.
7. From a point on the floor the angle of elevation to the top of a door is 47⁰, while the angle of elevation to the ceiling above the door is 59⁰. If the ceiling is 10 ft above the floor, what is the vertical dimension of the door?
8. A man standing on the roof of a building 60 ft high looks down to the building across the street. He finds the angle of depression to the roof of that building from the roof of his building to be 34.5⁰, while the angle of depression from the roof of his building to the bottom of the building across the street is 63.2⁰. How tall is the building across the street?
9. A person standing at point A notices that the angle of elevation to the top of the antenna is 47⁰30’. A second person standing 33 ft farther from the antenna than the person at A finds the angle of elevation to the top of the antenna to be 42⁰10’.How afar is the person at A from the base of the antenna?
10. Two people decide to find the height of a tree. They position themselves 25 ft apart in line with, and on the same side of, the tree. I they find that the angles of elevation from the ground where they are standing to the top of the tree are 65⁰ and 4⁰, how tall is the tree?