Show all your work carefully and completely. Calculators are allowed. Except in problems 10 and 11 on Part II, degrees are not used on this exam and should not be used as answers.

10. You are standing 10 feet away from a door, and from there you measure the angle of depression to the bottom of the door to be $25^\circ$ and the angle of elevation to the top of the door to be $15^\circ$. With this information, calculate the height of the door.

11. An automobile windshield wiper is 12 inches long and rotates through an angle of $100^\circ$. If the blade of the wiper is only 10 inches long, what is the area of the windshield cleaned by the blade of the wiper? Include a diagram of the situation in your solution.