

Math 16A
Vogler
Worksheet 7

1.) A woman 6 feet tall is walking away from a street lamp which is 10 feet high at the rate of 3 ft./sec. How fast is the tip of her shadow moving away from her feet when she is

- a.) 10 feet from the base of the street lamp ?
- b.) 100 feet from the base of the street lamp ?

2.) A small helium-filled balloon sits 20 feet from the base of a street lamp which is 10 feet high. The balloon is released and rises vertically at the constant rate of 2 ft./sec. How fast is the tip of the balloon's shadow moving away from the base of the street lamp when the balloon is

- a.) 4 feet above the ground ?
- b.) 8 feet above the ground ?
- c.) 9.5 feet above the ground ?

3.) The volume of a cube is changing at the constant rate of $15 \text{ ft.}^3/\text{min.}$ At what rate is the surface area of the cube changing when

- a.) the surface area is 24 ft.^2 ?
- b.) the surface area is 150 ft.^2 ?