



5. The Dubois formula relates a person's surface area,  $S$ , in square meters, to weight  $w$  in kg, and height  $h$  in centimeters, by

$$S = 0.01w^{0.25}h^{0.75}.$$

- (a) What is the surface area of a person who weighs 60 kg and is 150 cm tall?
- (b) The person in part (a) stays constant height but increases in weight by 0.5 kg/year. At what rate is his surface area increasing when his weight is 62 kg?

6. A water tank is in the shape of an inverted cone with depth 10 meters and top radius 8 meters. Water is flowing into the tank at  $0.1 \text{ m}^3/\text{min}$  but leaking out at a rate of  $0.004h^2 \text{ m}^3/\text{min}$ , where  $h$  is the depth of the water in meters. Can the tank overflow?