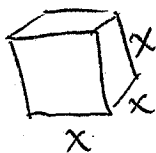


Name: Solutions

Quiz 8

1. A cube starts with side length 1 ft, and expands so that the side length grows at a rate of 2 ft/s. How fast is the surface area growing after 3 seconds? (Remember to clearly define any variables you use, show all your work, and give the units of your answer.)



A = Surface Area

$$A = 6x^2$$

$$\frac{dA}{dt} = 6 \cdot 2x \frac{dx}{dt} = 12x \frac{dx}{dt}$$

$$x(t) = 1 + 2t$$

$$x(3) = 7$$

$$\text{so } \left. \frac{dA}{dt} \right|_{t=3} = 12 \cdot 7 \cdot 2 \frac{\text{ft}^2}{\text{s}}$$