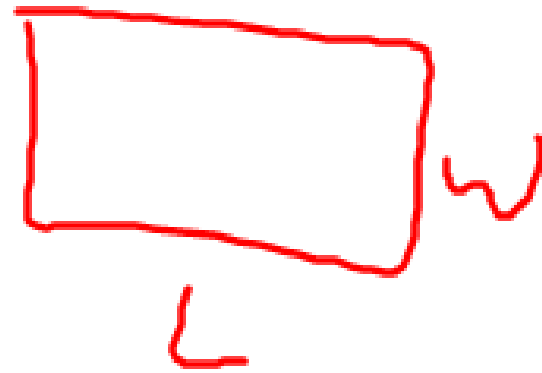


p 63 #2



$$P = 2L + 2w$$

(a)

$$\frac{dP}{dt} = 2 \cdot \frac{dL}{dt} + 2 \frac{dw}{dt}$$

$$\frac{dP}{dt} = 2(2) + 2(2) = 8 \frac{\text{in}}{\text{sec}}$$

$$A = LW \quad 2 \textcircled{a}$$

$$\frac{dA}{dt} = \frac{dL}{dt} \cdot w + \frac{dw}{dt} \cdot L$$

$$\frac{dA}{dt} = 2(6) + 2(10) = 32 \frac{\text{in}^2}{\text{sec}}$$

~~4~~
c) $\frac{dP}{dt} = 2(3) + 2(-3) = 0 \frac{\text{in}}{\text{sec}}$

$$\frac{dA}{dt} = 6(3) + 10(-3) = -12 \frac{\text{in}^2}{\text{sec}}$$

$$\textcircled{3} \quad A = \frac{1}{2}bh$$

$$\frac{dA}{dt} = \frac{1}{2} \left(\frac{db}{dt} \cdot h + \frac{dh}{dt} \cdot b \right)$$

$$a^2 + b^2 = c^2$$

$$2a \frac{da}{dt} + 2b \frac{db}{dt} = 2c \frac{dc}{dt}$$

Formulas

(67)

Circle

$$C = 2\pi r$$

$$\frac{dC}{dt} = 2\pi \cdot \frac{dr}{dt}$$

$$A = \pi r^2$$

$$\frac{dA}{dt} = \pi \cdot 2r \cdot \frac{dr}{dt}$$

Cylinder

$$V = \pi r^2 h$$



$$SA = 2\pi r^2 + 2\pi r h$$

Sphere

$$V = \frac{4}{3} \pi r^3$$

$$SA = 4\pi r^2$$

Boxes

$$V = LWH$$