Related Rates I

Q5 Alternate (silly-ish) Soln

Given: $\frac{dl}{dt} = -3$, $\frac{dw}{dt} = 2$, $A = lw$

Find: $\frac{dA}{dt}$

$A = l \cdot w$

$$\frac{dA}{dt} = \frac{dA}{dl} \cdot \frac{dl}{dt}$$

$$= \left[\left(\frac{d}{dl}(l)\right)(w) + (l)\left(\frac{d}{dl}(w)\right) \right] \cdot (-3)$$

$$= \left[(1)(w) + (l)\left(\frac{dw}{dt} \cdot \frac{dt}{dl}\right) \right] \cdot (-3)$$

$$= \left[w + l\left((2) \cdot \left(-\tfrac{1}{3}\right)\right) \right] \cdot (-3)$$

$$= -3w + 2l$$