

$$\textcircled{1} \frac{dP}{dt} = 4 \cdot \frac{dx}{dt} \quad \textcircled{2} \frac{dA}{dt} = \frac{db}{dt} \cdot h + \frac{dh}{dt} \cdot b$$

$$\textcircled{3} \frac{dA}{dt} = \frac{1}{2} \left(\frac{db}{dt} \cdot h + \frac{dh}{dt} \cdot b \right) \quad \textcircled{4} \frac{dC}{dt} = 2\pi \frac{dr}{dt}$$

$$\textcircled{5} \frac{dA}{dt} = 2\pi r \cdot \frac{dr}{dt} \quad \textcircled{6} \frac{dV}{dt} = 3x^2 \cdot \frac{dx}{dt}$$

$$\textcircled{7} 2x \cdot \frac{dx}{dt} + 2y \cdot \frac{dy}{dt} = 2z \cdot \frac{dz}{dt}$$

$$\textcircled{8} \frac{dV}{dt} = 2x \cdot \frac{dx}{dt} \cdot h + \frac{dh}{dt} \cdot x^2$$

$$\textcircled{9} \frac{dV}{dt} = \frac{1}{3}\pi \left(2r \frac{dr}{dt} \cdot h + \frac{dh}{dt} \cdot r^2 \right) \quad \textcircled{10} \frac{df}{dt} = -10x \cdot \frac{dx}{dt} + 30 \frac{dx}{dt}$$

$$\textcircled{11} \frac{dV}{dt} = 4\pi r^2 \cdot \frac{dr}{dt} \quad \textcircled{12} \frac{df}{dt} = 1 \quad \textcircled{13} \frac{dx}{dt} = -10t + 30$$

$$\textcircled{14} V = (lw) \cdot h \rightarrow v'(t) = (l(t) \cdot w(t))' \cdot h + h'(t) \cdot l(t) \cdot w(t)$$

$$\frac{dV}{dt} = v'(t) = (l'(t) \cdot w(t) + w'(t) \cdot l(t)) \cdot h + h'(t) \cdot l(t) \cdot w(t)$$

$$\text{or } \frac{dV}{dt} = \left(\frac{dl}{dt} w + \frac{dw}{dt} l \right) h + \frac{dh}{dt} \cdot l \cdot w$$

$$\textcircled{15} (-\sin \theta) \frac{d\theta}{dt} = \frac{\frac{da}{dt} \cdot h - \frac{dh}{dt} \cdot a}{h^2}$$

$$(16) \quad \frac{dw}{dt} = \frac{1}{4}(100-w)$$

$$\frac{d}{dt} \left[\frac{dw}{dt} \right] = \frac{d}{dt} \left[\frac{1}{4}(100-w) \right]$$

$$\frac{d^2w}{dt^2} = -\frac{1}{4} \frac{dw}{dt} = -\frac{1}{4} \left[\frac{1}{4}(100-w) \right]$$

$$\frac{d^2w}{dt^2} = -\frac{1}{16}(100-w)$$