

$$\textcircled{1} \quad A = bh$$

$$\frac{dA}{dt} = \frac{db}{dt} h + b \frac{dh}{dt}$$

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

$$\frac{dA}{dt} = \frac{1}{2} \frac{db}{dt} h + \frac{1}{2} b \frac{dh}{dt}$$

$$\textcircled{3} \quad A = \pi r^2$$

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

$$\textcircled{4} \quad V = LWH$$

$$\frac{dV}{dt} = \frac{dL}{dt} wH + L \frac{dw}{dt} H + LW \frac{dH}{dt}$$

$$\textcircled{5} \quad V = \pi r^2 h$$

$$\frac{dV}{dt} = 2\pi r \frac{dr}{dt} h + \pi r^2 \frac{dh}{dt}$$

$$\textcircled{6} \quad V = \frac{4}{3} \pi r^3$$

$$\frac{dV}{dt} = 4\pi r^2 \frac{dr}{dt}$$

*Correct on original

$$\textcircled{7} \quad V = \frac{1}{3} \pi r^2 h$$

$$\frac{dV}{dt} = \frac{2}{3} \pi r \frac{dr}{dt} h + \frac{1}{3} \pi r^2 \frac{dh}{dt}$$

$$\textcircled{8} \quad S = 6x^2$$

$$\frac{dS}{dt} = 12x \frac{dx}{dt}$$

$$\textcircled{9} \quad S = 4\pi r^2$$

$$\frac{dS}{dt} = 8\pi r \frac{dr}{dt}$$

$$\textcircled{10} \quad O = H \sin \theta$$

$$\frac{dO}{dt} = \frac{dH}{dt} \sin \theta + H \cos \theta \frac{d\theta}{dt}$$

$$\textcircled{11} \quad A = H \cos \theta$$

$$\frac{dA}{dt} = \frac{dH}{dt} \cos \theta - H \sin \theta \frac{d\theta}{dt}$$

$$\textcircled{12} \quad a^2 + b^2 = c^2$$

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

or

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