3. $\frac{dr}{dt} = 5$ $\quad \frac{dV}{dt} = ?$

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

$\frac{d}{dt}[V] = \frac{d}{dt}\left[\frac{4}{3}\pi r^3\right]$

$\frac{dV}{dt} = \frac{4}{3}\pi \cdot 3r^2 \frac{dr}{dt}$

$\frac{dV}{dt} = 4\pi r^2 (5)$

$\frac{dV}{dt} = 20\pi r^2$

$r = 10$

$\frac{dV}{dt} = 20\pi (10)^2$

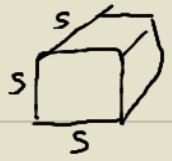
$= 2000\pi$

$r = 20$

$\frac{dV}{dt} = 20\pi (20)^2$

$= 20\pi (400)$

$= 8000\pi$

4. 

$\frac{ds}{dt} = 4$ $\quad \frac{dV}{dt} = ?$

$V = s^3$

$\frac{d}{dt}(V) = \frac{d}{dt}(s^3)$

$\frac{dV}{dt} = 3s^2 \cdot \frac{ds}{dt}$

$= 3s^2 (4)$

$\frac{dV}{dt} = 12s^2$

$s = 2$

$\frac{dV}{dt} = 12(2)^2$

$= 48$

$s = 20$

$\frac{dV}{dt} = 12(20)^2$

$= 12(400)$

$= 4800$