Exercise :6

Find the total derivative of the function with respect to 't'

① $w = x^3yz + xy + z + 3$

$x = 3\cos t$

$y = 3\sin t$ Find $\frac{dw}{dt}$

$z = 2t$

② $w = x^2z + y^2z + z^2x$

$x = t$, $y = 5t^2$, $z = 4t$ Find $\frac{dw}{dt}$

(Hint: If function $z = f(x,y)$

$x = f(t)$ & $y = f(t)$

$$\frac{dz}{dt} = \frac{\partial z}{\partial x} \cdot \frac{dx}{dt} + \frac{\partial z}{\partial y} \cdot \frac{dy}{dt}$$