

- Sec 14.2 :-

[2] If $Z = x^5 - 6x + 4y^4 - y^2$. find:

$$\frac{\partial Z}{\partial x} = 5x^4 - 6$$

$$\frac{\partial Z}{\partial y} = 16y^3 - 2y$$

[10] $C(x, y) = 1000 - 4x + xy^2$, find

$$\frac{\partial C}{\partial x} = -4 + y^2$$

$$\frac{\partial C}{\partial y} = 2xy$$

[12] $q = \frac{5P_1 + 4P_2}{P_1 + P_2}$, find $\frac{\partial q}{\partial P_1}$ and $\frac{\partial q}{\partial P_2}$

$$\rightarrow \frac{\partial q}{\partial P_1} = \frac{(P_1 + P_2)(5) - (5P_1 + 4P_2)(1)}{(P_1 + P_2)^2}$$

$$= \frac{P_2}{(P_1 + P_2)^2}$$

$$\rightarrow \frac{\partial q}{\partial P_2} = \frac{(P_1 + P_2)(4) - (5P_1 + 4P_2)(1)}{(P_1 + P_2)^2} = \frac{-P_1}{(P_1 + P_2)^2}$$

14.3