

partial Derivatives

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$z = f(x, y) \rightarrow$ Independent variable (x, y)
 \downarrow
 z Dependent variable.

$$\text{Ex} \rightarrow z = x^2 + y^2$$

$$\frac{dz}{dx} = 2x$$

$$z_x = 2x$$

$$z_{xx} = 2$$

$$\frac{dz}{dy} = 2y$$

$$z_y = 2y$$

$$z_{yy} = 2$$

$$\text{Ex} \rightarrow z = x^2 y^2$$

$$z_x = 2xy^2$$

$$z_{xy} = 4xy$$

$$z_y = 2x^2 y$$

$$z_{yn} = 4xy$$