

Iqiyudin M. Khan

18305141038

$$M(x,y)dx + (2x^2y^3 + x^4y)dy = 0$$

PD Biasa disebut PD Eksak jika memenuhi syarat :

$$M(x,y) = \frac{\partial F(x,y)}{\partial x} \quad \text{dan} \quad N(x,y) = \frac{\partial F(x,y)}{\partial y}$$

Dari persamaan diatas, diperoleh

$$N(x,y) = 2x^2y^3 + x^4y$$

$$\frac{\partial N}{\partial x}(x,y) = 4xy^3 + 4x^3y$$

Suatu PD dikatakan eksak jika memenuhi hubungan

$$\frac{\partial M}{\partial y}(x,y) = \frac{\partial N}{\partial x}(x,y)$$

$$\frac{\partial M}{\partial y}(x,y) = 4xy^3 + 4x^3y$$

Nilai $M(x,y)$ dapat ditentukan dari :

$$M(x,y) = \int \frac{\partial M}{\partial y}(x,y) dy$$

$$\begin{aligned} M(x,y) &= \int (4xy^3 + 4x^3y) dy \\ &= xy^4 + 2x^3y^2 + C \end{aligned}$$

Jadi, $M(x,y) = xy^4 + 2x^3y^2$ sedemikian sehingga PD
 $M(x,y)dx + (2x^2y^3 + x^4y)dy = 0$ merupakan PD Eksak