



No.:

Salsabily Rifay

16305144004

Akan ditentukan fungsi $M(x, y)$ sedemikian sehingga
 $M(x, y) dx + (2x^2y^3 + x^4y) dy = 0$
adalah suatu Persamaan Diferensial Eksak

Jawab:

PD $M(x, y) dx + (2x^2y^3 + x^4y) dy = 0$ dikatakan
PD eksak jika memenuhi

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

$$\text{adt } \frac{\partial M(x, y)}{\partial y}$$

$$\frac{\partial M(x, y)}{\partial y} = \frac{\partial (2x^2y^3 + x^4y)}{\partial x}$$

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

akan ditentukan $M(x, y)$ dengan mengintegrasikan
pers. (i) thdp y

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

$$M(x, y) = xy^4 + 2x^3y^2 + \phi(y)$$

Sehingga PD $(xy^4 + 2x^3y^2 + \phi(y)) dx + (2x^2y^3 + x^4y) dy = 0$
terpenuhi PD eksak.

