UTS Kalkulus Semester 3

Aldi Maulana Iqbal – 20210801222

Date:

3. $z^3 - 3x^2y + 6xyz = 0$

a. $\frac{dy}{dx}$

$f(x,y,z) = z^3 - 3x^2y + 6xyz$, $f_x = ?$

$f(x,y,z) = z^3 - 3x^2y + 6xyz$, $f_z = ?$

$f_x = \frac{d}{dx}(z^3 - 3x^2y + 6xyz)$

$f_x = \frac{d}{dx}(z^3 - 3yx^2 + 6yzx)$

$f_x = \frac{d}{dx}(z^3) + \frac{d}{dx}(-3yx^2) + \frac{d}{dx}(6yzx)$

$f_x = 0 - 3y \times 2x + 6yz$

$f_x = -6xy + 6yz$

$f_z = \frac{d}{dz}(z^3 - 3x^2y + 6xyz)$

$f_z = \frac{d}{dz}(z^3) + \frac{d}{dz}(-3x^2y) + \frac{d}{dz}(6xyz)$

$f_z = 3z^2 + 0 + 6xy$

$f_z = 3z^2 + 6xy$

- $\frac{dz}{dx} = \frac{-6xy + 6yz}{3z^2 + 6xy}$
- $\frac{dz}{dx} = \frac{3(-2xy + 2yz)}{3(z^2 + 2xy)}$
- $\frac{dz}{dx} = \frac{-2xy + 2yz}{z^2 + 2xy}$

→ $\frac{dz}{dx} = \frac{2xy - 2yz}{z^2 + 2xy}$ //

- $\frac{dy}{dz}$

$f(x,y,z) = z^3 + 3x^2y + 6xyz$, $f_y = ?$

$f(x,y,z) = z^3 + 3x^2y + 6xyz$, $f_z = ?$

- $f_y = \frac{d}{dy}(z^3 - 3x^2y + 6xyz)$

$f_y = \frac{d}{dy}(z^3 - 3x^2y + 6xzy)$

$f_y = \frac{d}{dy}(z^3) + \frac{d}{dy}(-3x^2y) + \frac{d}{dy}(6xzy)$

$f_y = 0 - 3x^2 + 6xz$

$f_y = -3x^2 + 6xz$

- $f_z = \frac{d}{dz}(z^3 - 3x^2y + 6xyz)$

$f_z = \frac{d}{dz}(z^3) + \frac{d}{dz}(3x^2y) + \frac{d}{dz}(6xyz)$

$f_z = 3z^2 + 0 + 6xy$

$f_z = 3z^2 + 6xy$

- $\frac{dz}{dy} = -\frac{-3x^2 + 6xz}{3z^2 + 6xy}$
- $\frac{dz}{dy} = -\frac{3(x^2 + 2xz)}{3(z^2 + 2xy)}$
- $\frac{dz}{dy} = -\frac{-x^2 + 2xz}{z^2 + 2xy}$
- $\frac{dz}{dy} = \frac{x^2 - 2xz}{z^2 + 2xy}$

4 $x+y+z=120$

$x = 120 - y - z$

$a = xy$

$a = (120-y-z)(y)$

$a = 120y - y^2 - yz$

$a' = 0$

$a' = 120y - y^2 - yz = 0$

$y(120y - y - z) = 0$

$y = 0$

$y = 120 - z$

$a = 120(120-z) - (120)^2 - (120)z$

$a = -240z$ //

Nomor 4

5 $x^2 = -8y$ dan $x = y^2$

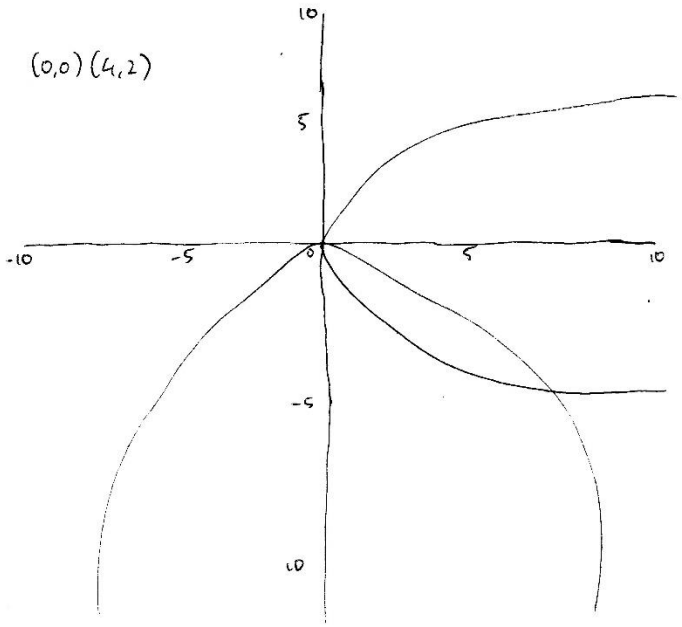
$-8y = y^2$

$y_1 = 0$

$y_2 = -2$

- $x^2 = -8(0)$
  $x = 0$
- $x = y^2$
  $x = -2^2$
  $x = 4$

(0,0) (4,2)



Nomor 5

5 $x^2 = -8y$ dan $x = y^2$

$-8y = y^2$

$y_1 = 0$

$y_2 = -2$

- $x^2 = -8(0)$
  $x = 0$
- $x = y^2$
  $x = -2^2$
  $x = 4$

(0,0) (4,2)