

Date:

Nama : Abdillah Mukti Auzan Mubin

NPM : 40621100046

UAS kalkulus

4. Tentukan Solusi Persamaan diferensial orde 1 berikut:

$$a. \frac{dy}{dx} = \frac{3x^2}{1-2y}$$

Solusi:

$$dy = \frac{3x^2}{1-2y} dx$$

$$(1-2y) dy = 3x^2 dx$$

$$\int (1-2y) dy = \int 3x^2 dx$$

$$y - y^2 + C_1 = x^3 + C_2, C_1 \in \mathbb{R}, C_2 \in \mathbb{R}$$

$$y - y^2 = x^3 + C, C \in \mathbb{R}$$

$$b. y' = -3y + e^{-2x}$$

Solusi:

$$\frac{dy(x)}{dx} = e^{-2x} - 3y(x)$$

$$\frac{dy(x)}{dx} + 3y(x) = e^{-2x}$$

$$e^{3x} \frac{dy(x)}{dx} + (3e^{3x}) y(x) = e^x$$

$$y(x) = C_1 e^{-3x} + e^{-2x}$$