

Nama : Andri Firman Sarutra

Kalkulus II

NIM : 201011402125

UAS

Semester 2

No
Date

1. $\int x \cdot e^{2x} dx$

$$U = x$$

$$dU = dx$$

$$dV = e^{2x} dx$$

$$V = \frac{1}{2} e^{2x}$$

$$\int x e^{2x} dx = x \cdot \frac{1}{2} e^{2x} - \int \frac{1}{2} e^{2x} dx$$

$$= \frac{1}{2} x e^{2x} - \frac{1}{2} \int e^{2x} dx$$

$$= \frac{1}{2} x e^{2x} - \frac{1}{4} e^{2x} + C //$$

2. $\int (x-1) \ln(2x) dx$

$$U = (x-1)$$

$$dU = dx$$

$$dV = \ln(2x) dx$$

$$V = x \ln(2x)$$

$$\int U dV = UV - \int V dU$$

$$\int (x-1) \cdot \ln(2x) dx = (x-1)x \ln(2x) - \int x \ln(2x) dx$$

$$\int (x-1) \cdot \ln(2x) dx = x \ln(2x) + x - 1 - \ln(2x) + C //$$

$$3. \int x^2 \sqrt[3]{(x^3+10)} dx$$

$$\int x^2 (x^3+10)^{\frac{1}{3}} dx$$

$$u = (x^3+10)^{\frac{1}{3}}$$

$$u = x + 10^{\frac{1}{3}}$$

$$\frac{du}{dx} = 1$$

$$dx = \frac{du}{1}$$

$$\begin{aligned} &= \int x^2 \cdot u \cdot du \\ &= 2x \cdot x + 10^{\frac{1}{3}} + C \\ &= 3x + \sqrt[3]{10} + C // \end{aligned}$$

$$4. \int \frac{x}{(x+1)} dx$$

$$u = x+1$$

$$du = (1+0) dx$$

$$dx = \frac{1}{1} du$$

$$dx = 1 du$$

$$\int \frac{1 du}{u} = 1 \int \frac{du}{u} = 1 (\ln u + C)$$

$$= 1 \ln(x+1) + C //$$