

$$\ln 3 + \ln x = \ln(3x)$$

$$\ln(3+x) \text{ can't simplify}$$

"Separate, Separate,
integrate, integrate"

2B

Ex1

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

$$f(0) = \frac{1}{2}$$

$$\int e^{2y} dy = \int 3x^2 dx$$

$$\frac{1}{2} e^{2y} = \frac{3x^3}{3} + C$$

$$\frac{1}{2} e^{2(\frac{1}{2})} = 0^3 + C$$

$$\frac{1}{2} e = C$$

$$u = 2y$$

$$\frac{du}{2} = \frac{3x^2 dx}{1}$$

$$\frac{1}{2} e^{2y} = x^3 + \frac{1}{2} e$$

$$\ln(e^{2y} = 2x^3 + e)$$

$$\ln e^{2y} = \ln(2x^3 + e)$$

$$2y = \ln(2x^3 + e)$$

$$y = \frac{1}{2} \ln(2x^3 + e)$$

$$\text{OR } y = \ln \sqrt{2x^3 + e}$$

Ex2

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

$$\int y^{-2} dy$$

$$\int \frac{dy}{y^2} = \int 2 dx$$

$$\frac{-1}{-1} = 2(1) + C$$

$$1 = 2 + C$$

$$-1 = C$$

$$-y^{-1} = 2x + C$$

$$\frac{-1}{y} = 2x + C$$

$$\Rightarrow \frac{-1}{y} = 2x - 1$$

when $x = 2$

$$\frac{-1}{y} = 4 - 1$$

$$\frac{-1}{y} = 3$$

$$y = -\frac{1}{3}$$

principes, principes
"supplément, supplément"

(18) End = x=10 = End
Alpha End (18) End

Ex 3

$$\frac{dy}{dx} = y^2(6-2x)$$

$$f(3) = \frac{1}{4}$$

$$\int \frac{dy}{y^2} = \int (6-2x) dx$$

$$\begin{aligned} \frac{-1}{y} &= 6(3) - 9 + C \\ \frac{-1}{4} &= 18 - 9 + C \\ -4 &= 18 - 9 + C \\ -13 &= C \end{aligned}$$

$$-y^{-1} = 6x - x^2 + C$$

$$\frac{-1}{y} = 6x - x^2 - 13$$

$$y = \frac{-1}{6x - x^2 - 13}$$

WS 2

① $\frac{dy}{dx} = 6x^2y$ $y(0) = 4$

$$\int \frac{dy}{y} = \int 6x^2 dx$$

$$\begin{aligned} \ln 4 &= 2(0) + C \\ \ln 4 &= C \end{aligned}$$

$$\ln y = \frac{2}{3}x^3 + C$$

$$\ln y = 2x^3 + \ln 4$$

$$e^{2x^3 + \ln 4} = y$$

$$(e^{2x^3}) (e^{\ln 4}) = y$$

$$4e^{2x^3} = y$$