

Eg 3: Definite Integrals.

$$\int_a^b u(x) \underbrace{v'(x) dx}_{dv} = \left[u(x) v(x) \right]_a^b - \int_a^b v(x) \underbrace{u'(x) dx}_{du}$$

$$\int_a^b u dv = [uv]_a^b - \int_a^b v du$$

Eg 3: $\int_1^2 \ln x \, dx$

$u = \ln x \quad dv = dx$

$du = \frac{1}{x} dx \quad v = x$

$$= [\ln x \cdot x]_1^2 - \int_1^2 x \cdot \frac{1}{x} dx$$

$$= [x \ln x]_1^2 - \int_1^2 1 dx$$

$$= [x \ln x - x]_1^2$$

$$= (2 \ln 2 - 2) - (\ln 1 - 1)$$

$$= 2 \ln 2 - 2 + 1$$

$$= 2 \ln 2 - 1$$

Preview from Notesale.co.uk
Page 2 of 2