

According to the **Power Rule of differentiation**:

$$\frac{d}{dx}uv = uv' + vu'$$

$$\implies d(uv) = uv'dx + vu'dx$$

Integrating both sides:

$$\int d(uv) = \int uv'dx + \int vu'dx$$

$$\implies uv = \int uv'dx + \int vu'dx$$

Rearranging the expressions:

$$\boxed{\int uv' = uv - \int vu'}$$

This identity is also known as **Integration By Parts**