## **Integration by Parts: Method**

From

$$d(fg) = fdg + gdf$$

upon integrating both sides and rearranging, we get

$$\int f \, dg = \int d(fg) - \int g \, df$$
$$\int f \, dg = fg \, \left] - \int g \, df$$

Use of this statement is called "integration by parts".

It is useful when the integral on the right is recognizable, or is a multiple of that on the left. o.uk

These occur when the integrand is a monomial times an expose trigonometric function, or when the integrand be solutions in it. It can often be used when the integrand has other investigations in it, as well.

It also helps for inverse powers of sine and cothe. revie

To evaluate:  $\int \ln x \, dx$ 

Set

Examp

 $f = \ln x; dg = dx$ 

Deduce

$$df = \frac{dx}{x}$$
;  $g = x + C$ 

Any value of C can be used here.

Here and in the other examples, we choose C = 0.

Obtain