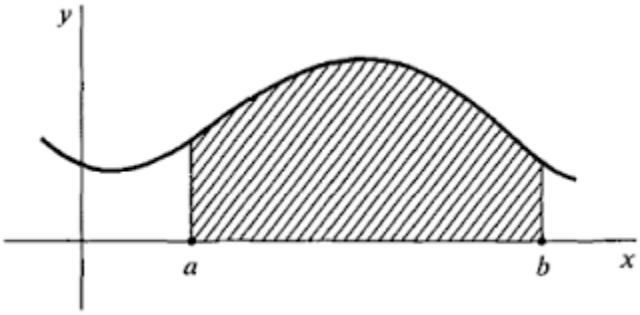

Suppose f(x)≥ 0 the integral a ≤ x ≥ b

Then the region R under the curve y=f(x) and between x=a and x= b has an area given

Area of R = $\int_a^b f(x)\,dx$

Integration by parts

This rule is used to integrate a product of functions.

The product rule differentiation is given as:

d(uv)/dx = udv/dx + vdu/dx

integrate both sides:

uv=∫ udv/dx + ∫ vdu/dx

∫udv= uv- ∫vdu

where dv is the derivative of v and du is the derivative of u.

example:

$\int x^2 \ln x\,dx$

the two factors are x^2 and log x thus decide which is u and dv.

dv= x^2 u= In x dx

v= $x^3/3$ du= 1/x