Integración por partes

ByteMath

$$\int e^{2x}\cos(e^x)\,dx$$

$$\int u\,dv = uv - \int v\,du$$

$$\int e^{2x}\cos(u)\frac{du}{e^x}$$

Cambio de variable

$u = e^x$

$du = e^x\,dx$

$dx = \frac{du}{e^x}$

$$\int e^{x}\cos(u)\,du$$

$$\int u\cos(u)\,du$$

$w = u \qquad dw = 1\,du$

$dv = \cos(u) \qquad v = \operatorname{sen}(u)$

$$\int w\,dv = wv - \int v\,dw$$

$$\int u\cos(u)\,du = u\operatorname{sen}(u) - \int \operatorname{sen}(u)\,du$$

$*\int \operatorname{sen}(u) = -\cos(u)$

$$\int u\cos(u)\,du = u\operatorname{sen}(u) - [-\cos(u)]$$

$$\int u\cos(u)\,du = u\operatorname{sen}(u) + \cos(u) \qquad u = e^x$$

$$\int u\cos(u)\,du = e^x\operatorname{sen}(e^x) + \cos(e^x) + C$$

$$\int e^{2x}\cos(e^x)\,dx = e^x\operatorname{sen}(e^x) + \cos(e^x) + C$$