

Integración por partes

Resolver las siguientes integrales:

$$a) \int x^2 \cos x dx = 2x \cos x + (x^2 - 2) \operatorname{sen} x + K$$

$$b) \int x^3 \ln x dx = -\frac{x^4}{16} + \frac{1}{4} \ln |x| + K$$

$$d) \int \arctg x dx = x \arctg x - \frac{1}{2} \ln |1 + x^2| + K$$

$$e) \int \sqrt{x} \ln x dx = \frac{2}{9} \sqrt{x^3} (-2 + 3 \ln |x|) + K$$

$$f) \int (1 - 3x) 3^x dx = \frac{3^x (3 + \ln 3 - x \ln 27)}{\ln^2 3} + K$$

$$g) \int \cos(\ln(x)) dx = \frac{1}{2} x \cos(\ln |x|) + \frac{1}{2} x \operatorname{sen}(\ln |x|) + K$$

$$h) \int \ln^2 x dx = 2x - 2x \ln |x| + x \ln^2 |x| + K$$

$$i) \int x \operatorname{sen} x \cos x dx = -\frac{1}{4} x \cos(2x) + \frac{1}{8} \operatorname{sen}(2x) + K$$

$$j) \int x^3 \ln^2 x dx = \frac{1}{32} x^4 \left(\ln^2 |x| - 4 \ln |x| + 1 \right) + K$$

$$k) \int \operatorname{arcsen} x dx = \sqrt{1 - x^2} + x \operatorname{arcsen} x + K$$

$$l) \int \cos^2 x dx = \frac{\operatorname{sen} x \cos x + x}{2} + K$$

$$m) \int (2x + 4) e^{2x+4} dx = (2x + 4) \frac{1}{2} e^{2x+4} - \frac{1}{2} e^{2x+4} + K$$

$$n) \int \frac{\ln x}{x^2} dx = -\frac{\ln |x|}{x} - \frac{1}{x} + K$$

$$\tilde{n}) \int 3x e^{2x} dx = 3e^{2x} \left(\frac{x}{2} - \frac{1}{4} \right) + K$$

$$o) \int 5x \operatorname{sen} 2x dx = 5 \left(-\frac{1}{2} x \cos(2x) + \frac{1}{4} \operatorname{sen}(2x) \right) + K$$

$$p) \int e^x \operatorname{sen} x dx = \frac{1}{2} e^x \left(\operatorname{sen}(x) - \cos(x) \right) + K$$