

$$\int x^4 \cos(x) = x^4 \sin(x) - [4x^3(-\cos(x))] + [12x^2(-\sin(x))] - [24x \cos(x)] + [24 \sin(x)] - \int 0 dx$$

$$\int x^4 \cos(x) = x^4 \sin(x) - \int 4x^3 \sin(x) dx = x^4 \sin(x) - [4x^3(-\cos(x)) - \int 12x^2(-\cos(x)) dx]$$

$$= x^4 \sin(x) - 4x^3(-\cos(x)) + \int 12x^2(-\cos(x)) dx$$

$$= x^4 \sin(x) - 4x^3(-\cos(x)) + 12x^2(-\sin(x)) dx - \int 24x(-\sin(x)) dx$$

$$= x^4 \sin(x) - 4x^3(-\cos(x)) + 12x^2(-\sin(x)) dx - [24x(\cos(x)) dx - \int 24 \cos(x) dx]$$

$$= x^4 \sin(x) - 4x^3(-\cos(x)) + 12x^2(-\sin(x)) dx - 24x(\cos(x)) dx + \int 24 \cos(x) dx$$