$$\int x \cos x \, dx$$

## Solution

It would be nice to drop the power of $x$ from 1 to 0, which is why I'd like to make $x$ the $u$ of integration by parts. Let $u = x$ and $dv = \cos x \, dx$. Then $du = dx$ and $v = \sin x$. So

$$\int x \cos x \, dx = x \sin x - \int \sin x \, dx = x \sin x + \cos x + C$$