

# Calculus II

## Integrals of the form $\int x \sin(mx) dx$

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Integration by parts:  $\int u dv = uv - \int v du.$

## Example

$$\begin{aligned}
 \int x \sin x dx &= \int x d(-\cos x) && \left| \sin x dx = d(-\cos x) \right. \\
 &= x(-\cos x) - \int (-\cos x) dx \\
 &= -x \cos x + \int \cos x dx \\
 &= -x \cos x + \sin x + C
 \end{aligned}$$