

# Integral Techniques

## Linearity

$$\int [af(x) \pm bg(x)] \, dx = a \int f(x) \, dx \pm b \int g(x) \, dx, \quad \text{for constants } a \text{ and } b$$

## Power Rule

$$\int x^a \, dx = \frac{x^{a+1}}{a+1} + C, \quad \text{for constant } a \neq -1$$

## Integration by Substitution

$$\int f(u(x)) \frac{du}{dx} \, dx = \int f(u) du$$

## Integration by Parts

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