

$$b) \int x \sin kx \, dx$$

$$u \quad \frac{dv}{dx} \quad v \quad \frac{du}{dx}$$

$$u = x \quad v = -\frac{1}{k} \cos kx$$

$$(x) \cdot \left(-\frac{1}{k} \cos kx\right) - \int \left(-\frac{1}{k} \cos kx\right) dx$$

$$= -\frac{1}{k} x \cos kx + \frac{1}{k^2} \sin kx + C$$