

b) $\int x \sin 4x \, dx$

$$u = x \quad v = \frac{-1}{4} \cos 4x$$

$$\frac{du}{dx} = 1 \quad \frac{dv}{dx} = \sin 4x$$

$$\int u v - \int v \frac{du}{dx} \, dx$$

$$(x) \left(\frac{-1}{4} \cos 4x \right) - \int \frac{-1}{4} \cos 4x \, dx$$

$$\int -0.25 \cos 4x$$

$$(x) (-0.25 \cos 4x) + 0.25 \int \cos 4x \, dx$$

$$\int \cos 4x \, dx$$

$$= \frac{1}{4} \sin 4x$$

$$(x) (-0.25 \cos 4x) + 0.0625 \sin 4x + C$$