

1. Q —  $\int xe^{6x} dx$

A —

Let  $u = x; v' = e^{6x}$ . Therefore  $v = \frac{1}{6}e^{6x}$

According to integration by parts:

$$\int uv' = uv - \int vu'$$

Therefore  $\int xe^{6x} dx = x\frac{1}{6}e^{6x} - \int \frac{1}{6}e^{6x} dx$

$$= x\frac{1}{6}e^{6x} - \frac{1}{6} \int e^{6x} dx$$

$$= x\frac{1}{6}e^{6x} - \frac{1}{36}e^{6x} + C.$$