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

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

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