Some notes from class

2018-01-10

Example problem

To evaluate $\int 5xe^{3x^2}\,dx$, let $u = 3x^2$, so that $du = 6x\,dx$. Then $\frac{1}{6}\,du = x\,dx$, and

$$\begin{aligned}\int 5xe^{3x^2}\,dx &= 5\int e^{3x^2}x\,dx \\ &= 5\int e^u \frac{1}{6}\,du \\ &= \frac{5}{6}\int e^u\,du \\ &= \frac{5}{6}e^u + C = \frac{5}{6}e^{3x^2} + C\end{aligned}$$