

$$\begin{aligned}\int_0^1 (x-1)^2 e^x dx &= \left[(x-1)^2 e^x \right]_0^1 - \int_0^1 2(x-1) e^x dx \\ &= \left[(x-1)^2 e^x \right]_0^1 - \left[2(x-1) e^x \right]_0^1 + \int_0^1 2 e^x dx \\ &= 0 - 1 - 2 + 2e - 2 = \underline{\underline{2e - 5}}\end{aligned}$$