

4. $\int x e^{(x^2)} dx$ (5 points)

Let $u = x^2$

$$du = 2x dx$$

$$x dx = \frac{du}{2}$$

so $\int x e^{(x^2)} dx$

$$= \int e^{(x^2)} x dx$$

$$= \int e^u \frac{du}{2}$$

$$= \frac{1}{2} \int e^u du$$

$$= \frac{1}{2} e^u + C$$

$$= \boxed{\frac{1}{2} e^{(x^2)} + C}$$