

1. Evaluate $\int_0^1 \int_0^1 x e^{xy} dy dx$.

2. Let R be the square $0 \leq x \leq 1$, $0 \leq y \leq 1$. Explain why $\int \int_R \sin^2(x^3) dA \leq 1$.
(Don't try to compute it!)