

1. Evaluate $\int 2^x \sec^2(2^x) dx$.

2. Evaluate $\int 3^{\sin(2x)} \cos(2x) dx$.

3. Evaluate $\int x^2 2^{(x^3)} dx$.

4. A radioactive substance has a half life of 700 years. If there were 10 grams initially, how much will remain after 300 years?