

1. Evaluate  $\int_1^2 x \sec^{-1} x \, dx$

2. Evaluate  $\int_0^\pi \sin 2x \cos 3x \, dx$

3. Find  $\int (x^3 + 3x)e^{x^2} dx$ .

4. Find  $\int \coth^2 x \operatorname{csch}^4 x dx$