

Integrate the following:

1. $\int \left(\frac{\sec x}{\cot x}\right)^3 dx$

2. $\int \frac{x+2}{(x-1)(x^2+1)} dx$

3. $\int x^2 (4 - x^2)^{-\frac{3}{2}} dx$

4. $\int \cos(\ln x^2) dx$