

# Calculus - Integration Techniques

## Grade 11 | Difficulty: Hard

1. Evaluate the integral:  $\int (3x^2 - 4x + 1) dx$ .
2. Find the integral of  $f(x) = e^x \sin(x)$ .
3. Determine the area under the curve  $y = x^3$  from  $x = 1$  to  $x = 3$ .
4. Solve the improper integral  $\int_1^{\infty} (1/x^2) dx$ .
5. Find the volume of a solid of revolution using integration.