Read each problem **very carefully** before starting to solve it. Each problem is worth 5
points. It is necessary to show **all** your work. Correct answers without explanations are
worth 0 points. GOOD LUCK!!

1. Evaluate the integral $\int (1 + \sin^2 x) \cos^3 x \, dx$.

2. Use the method of partial fractions to evaluate the integral $f(x) = \dfrac{x^2 + 5x + 16}{x^3 + 3x^2 + x + 3}$.