

YOUR NAME: _____

George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Calculate the integral

$$\int \frac{(1-x)(x+3)}{x^2} dx =$$

2. Find the area of the region bounded by the graphs of $f(x) = x^2 + 2x - 1$ and $g(x) = 3x + 5$.

3. Find the integral

$$\int 5x(x^2 + 1)^9 dx.$$

4. Find the average value of $f(x) = xe^{-x^2}$ on $[0, 2]$.

5. Calculate the integral

$$\int \frac{\ln x}{\sqrt{x}} dx.$$