

YOUR NAME: _____

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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. Compute the integral $\int \frac{\cos(\pi/x)}{x^2} dx$.

2. Calculate the integral $\int_1^8 \frac{\ln x}{\sqrt[3]{x}} dx$.

3. Calculate the integral $\int \cot^3 x \sin^2 x dx$.

4. Calculate the integral $\int \frac{1}{\sqrt{x^2 + 16}} \, dx$.

(**Hint:** Recall from class that $\int \sec \theta \, d\theta = \ln |\sec \theta + \tan \theta| + C$.)

5. Compute the integral $\int \frac{2x^3 - x^2 + 9x - 4}{x^4 + 8x^2 + 16} \, dx$.