

### Practice Midterm Exam #3

1. Find the partial fraction decomposition of the function

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

2. Evaluate

$$\int x^{-3} e^{\frac{1}{x}} dx.$$

3. Determine whether the integral is convergent or divergent. Evaluate it if it is convergent.

$$\int_e^\infty \frac{dx}{x(\ln x)^2}.$$

4. Evaluate the integral

$$\int (\cos^4 x - \sin^4 x) dx.$$

5. Find the surface area of the surface of revolution about  $x$ -axis for  $y = \sin x$ ,  $0 \leq x \leq \pi$ .