Integration by Parts, Partial Fraction Decomposition - Worksheet
August 6 - PM

1. Evaluate the following indefinite integrals

   (a) $\int x e^x \, dx$

   (b) $\int \frac{\ln(x)}{x^2} \, dx$

   (c) $\int e^x \cos(x) \, dx$

2. Apply partial fraction decomposition to the following rational functions.

   (a) $f(x) = \dfrac{x - 1}{(x^2 + 3x + 2)}$

   (b) $f(x) = \dfrac{x - 1}{(x + 1)(x^2 + 1)}$

3. Evaluate the following indefinite integrals

   (a) $\int \dfrac{1}{x + x\sqrt{x}} \, dx$

   (b) $\int \dfrac{1}{x(x^4 + 1)} \, dx$