1. Evaluate $\displaystyle\int \frac{x}{x^2-2x-3}\,dx$ using Partial Fractions. Follow the steps below.

   (a) Is the degree of the numerator greater than (or equal to) the degree of the denominator for the function in the integrand?
   If yes, then use long division before proceeding to utilize the method of partial fractions. If no, continue this problem without doing long division.

   (b) Set up the method of partial fractions for your rational function. Make sure to factor out your denominator completely beforehand.

   (c) Write and solve a system of equations for your unknown constants by equating coefficients of like terms and by equating constants.

   (d) Evaluate your integral using the partial fraction representation of your rational function.

2. Evaluate $\displaystyle\int \frac{3x^4+1}{(x^2+1)(x-1)}\,dx$ by using Partial Fractions.

3. Evaluate $\displaystyle\int \frac{3\cos(x)}{\sin^2(x)+\sin(x)}\,dx$ by first making a substitution, and then using Partial Fractions.

4. Evaluate $\displaystyle\int \frac{7e^{2x}}{e^{2x}-2e^{x}-3}\,dx$ by first making a substitution, and then use Partial Fractions. Hint: $e^{2x} = e^{x} \cdot e^{x}$.