

## Problem Set 11

- 1) Compute the antiderivative of  $f(x) = \frac{x(x^2+1)(x-1)^2-2x+4}{(x^2+1)(x-1)^2}$ .

2) Evaluate the following integrals of rational functions:

(a) (8.5.15)

$$\int \frac{dt}{t^3 + t^2 - 2t}$$

(b) (8.5.19)

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

(c) (8.5.27)

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

(d) (8.5.37)

$$\int \frac{y^4 + y^2 - 1}{y^3 + y} dy$$

(e) (8.5.39)

$$\int \frac{e^t dt}{e^{2t} + 3e^t + 2}$$

(f) (8.5.56) Find the volume of the solid generated by revolving the region under the graph of  $y = \frac{2}{(x+1)(2-x)}$  for  $0 \leq x \leq 1$  about the  $y$ -axis.