Math 403, Homework 10

Due: Monday, April 24 in class.

Problem 1: Define the rational function

$$f(z) = \frac{3z^2 + z - 1}{z^3 - 3z + 2}\,.$$

(a) Write $f(z)$ as a sum of its principal parts.
(b) Find the power series of $f(z)$ centerend at 0 and determine its radius of convergence.
(c) Find the Laurent series of $f(z)$ on the annulus $1 < |z| < 2$.
(d) Find the Laurent series of $f(z)$ on the annulus $2 < |z| < \infty$.

3.1: 20
3.2: 2, 6, 10
3.3: 4 (a)-(c), 10