MAT 312: HOMEWORK 10

1. Textbook, p. 272, problem 1

2. Textbook, p. 272, problem 2

3. Textbook, p. 273, problem 3

4. (a) Show that for any n, $x^n - 1$ is divisible by $x - 1$. Find the quotient.
(b) Show that $x^n + 1$ is divisible by $x + 1$ if and only if n is odd. Find the quotient.

5. (a) Show that the remainder upon division of a polynomial $f(x)$ by $(x-a)$ is $r = f(a)$ (considered as polynomial of degree 0).
(b) The polynomial $f(x)$ has remiander 99 when divided by $x - 19$ and remainder 19 when divided by $x - 99$. What is the remainder when $f(x)$ is divided by $(x - 19)(x - 99)$?