5.3.1 Use quadratic reciprocity plus theorem 5.3. The first is -1, the second is 1.

5.3.2 You can use theorem 5.8, but this is easy enough that you don't need it. Remember theorem 5.5.

5.3.9 Use the example at the bottom of page 106 for $q = 3$. For the last part, show that $(-3/p) = 1$ for infinitely many primes p. Start in the usual way, by assuming that only primes p_1 through p_n work; use theorem 5.1 to get a contradiction.

6.3.4 If $x = m/n$, find an explicit formula for a_1. Use induction on m to show the expansion for x is finite.

For part b, show that the sequence $\{b_i\}$ is an infinite sequence with the property described in part a. The trickiest bit is showing that $b_i = 2^{3^k} + 1$ has the defining property.

6.4.4 Start by taking the derivative of $x/\ln(x)$ to get some help with the antiderivative of $1/\ln(t)$. You won't be able to do the anti-derivative explicitly, but you can get to $x/\ln(x) + A$, and then show $A = O(x/\ln^2(x))$.