Reading assignment: Chapter 8, and sections 9.1 and 9.2.

Exercises to be handed in: (all exercise numbers refer to Dummit and Foote, 3rd edition.)

Section 7.5: 2

Section 7.6: 5

Section 8.1: 8(a), (do for $D = -2, -3$ only), 10

Section 8.2: 4, 6, 8

Section 9.2: 1, 2, 7

Exercise not from the text: (to be handed in):
Recall that we defined localization in general for any multiplicative system $S$ of a commutative ring $R$, maybe containing zerodivisors.

1. Let $R$ be a commutative ring and let $S$ be a multiplicative system in $R$. Let $RS^{-1}$ be the localalization of $R$ at $S$. Let $I$ be an ideal of $R$.
   (a). Show that
   $$IS^{-1} = \left\{ \frac{r}{s} \mid r \in I, s \in S \right\}$$
   is an ideal of $RS^{-1}$. Show also that $\overline{S} = \{ s + I \mid s \in S \}$ is a multiplicative system in the factor ring $R/I$. Now show that
   $$RS^{-1}/IS^{-1} \cong (R/I)(\overline{S})^{-1}.$$