SOLUTIONS: PROBLEM SET 27 FROM SECTION 12.1

4. My apologies for this problem; I didn't notice when I assigned it that it involved alternate bases.

(a) $\frac{49+14+3}{7^3} = \frac{66}{343}$
(b) $\frac{6+3}{6^3-6} = \frac{9}{210}$
(c) $\frac{11+7}{11^2-1} = \frac{18}{120}$
(d) $\frac{256A+16B+C}{4095}$

6.

(a) $\frac{7}{12} = \frac{1}{100}\frac{175}{3} = \frac{1}{100}(58\frac{1}{3})$. The period length is 1 and the preperiod is .58.
(b) $\frac{11}{30} = \frac{1}{10}(3\frac{2}{3})$. The period length is 1 and the preperiod is .3.
(c) $\frac{1}{75} = \frac{1}{100}\frac{4}{3}$. The period length is 1 and the preperiod is .01.
(d) The period length is $\text{ord}_{23}10 = 22$; there is no preperiod.
(e) $\frac{13}{56} = \frac{1}{1000}\frac{1625}{7} = \frac{1}{1000}(232\frac{1}{7})$. The period length is $\text{ord}_7 10 = 6$, and the preperiod is .232.
(f) There is no preperiod. The period length is $\text{ord}_{61}10 = 60$.