

## MATH447/747 ASSIGNMENT 2

FALL 2012

Due **Friday September 21** in class.

- (1) Let  $F = \mathbb{Z}_3/(1 + x^2)$  and  $F' = \mathbb{Z}_3/(2 + x + x^2)$ .
  - (a) Give the multiplication table for  $F'$
  - (b) Give an explicit isomorphism between  $F$  and  $F'$  (for comparison the multiplication table for  $F$  is in the text on p28).
  - (c) Find a primitive element for  $F'$  and write all the remaining elements of  $F'$  as powers of the primitive element.
- (2) Vanstone and van Oorschot section 3.9 # 3
- (3) Repeat the the previous question on the code whose parity check matrix is the matrix  $H_2$  from Vanstone and van Oorschot section 3.9 #2 (note that this matrix is over  $\mathbb{F}_7$ .)
- (4) Vanstone and van Oorschot section 3.9 # 10, 17, 19