

3.60 60. Let $g(x)=x^3+x+1$. Consider the information sequence 1001.

Solutions follow questions:

a. Find the codeword corresponding to the preceding information sequence.

Using polynomial arithmetic we obtain:

$$\begin{array}{r}
 1011 \quad \left| \begin{array}{r}
 1010 \\
 \underline{1001}000 \\
 1011 \\
 \underline{01000} \\
 1011 \\
 \underline{00110}
 \end{array}
 \right.
 \end{array}$$

Codeword = 1001110

b. Suppose that the codeword has a transmission error in the first bit. What does the receiver obtain when it does its error checking?

$$\begin{array}{r}
 1011 \quad \left| \begin{array}{r}
 0001 \\
 \underline{0001}110 \\
 1011 \\
 \underline{101}
 \end{array}
 \right.
 \end{array}$$

CRC calculated by Rx = 101 → error