Problem 1. 10 points
Find a primitive polynomial $p(x)$ of degree 7 which is not $1 + x + x^7$, and construct its remainder table.

Problem 2. 10 points
Find the polynomial $p_3(x)$ associated with the polynomial you chose in problem 1.

Problem 3. 40 points
Construct an encoder and decoder spreadsheet for the two-error-correcting BCH code associated with this polynomial. It should:
- Have a place to enter the appropriate length message.
- Create an encoded message from it.
- Allow introduction of errors.
- Compute $t_1$ and $t_3$ from the encoded message by using the appropriate remainder tables.
- Compute the error locator polynomial from $t_1$ and $t_3$ and the appropriate tables.
- Compute the locations of the errors and correct up to two errors.
- Check to see if the corrected received message has no errors, (in case there were three original errors)
- Find the original message by dividing the corrected message by the encoding polynomials.