Class Problem
Math 2513
1/27/05

DEFINITION: If $x = x_1x_2x_3 \cdots x_{n-1}x_n$ is a bit string of length n then a **substring of** x is a bit string of the form $x_ix_{i+1} \cdots x_k$ where i and k are any integers satisfying $1 \leq i \leq n$ and $1 \leq k \leq n$. (Note that if k is less than i then we obtain the empty substring.)

PROBLEM. Let α be the bit string of length 7 given by

$$\alpha = 0011101 \ .$$

(a) There are eight different bit strings with length 3. Which (if any) of them do NOT occur as substrings of α?
(b) Let A be the set of all substrings of α. How many elements does A have? List all of the elements of A.