

6. EXTRA CREDIT 6.

Define  $A_0$  to be the empty set.

Now, for any natural number  $k$ , define  $A_{k+1}$  to be the set  $A_k \cup \{A_{k+1}\}$ .

(i) Draw the sets  $A_0, A_1, A_2$  and  $A_3$ , and  $A_4$ .

(ii) How many elements does  $A_k$  contain? Convince me that your answer is correct.