Hand-In Assignment 2

1. Calculate 3/7 in base 3.   [10 pts]

2. Let A = {a, b, c}. Define $F : A \rightarrow P(A)$ by

$$F(x) = \begin{cases} \{a,\ b\} & if \quad x = a \\ \{a,\ c\} & if \quad x = b \\ \{b\} & if \quad x = c \end{cases}$$

   Compute $S_F = \{x \in A;\ x \notin F(x)\}$ [10 pts]

3. Let A be a proper infinite subset of some set X. If x, y are two distinct elements of X that are not in A, we may set B = {x, y} $\cup$ A. What is the cardinality of B in terms of the cardinality of A? Justify your answer.
                                                               [10 pts]

4. Find a transfinite number that represents the cardinality of the open interval (0, 1) in terms of $\aleph_0$. Justify your answer.   [10 pts]