Problem Set 3 Solution

March 22, 2020

Question 1

1. Let $x \in \mathbb{R}$.

   Base Case (n = 0):

   Let $n = 0$.

   Then,

   $$a_0 = 0 \tag{1}$$

   Then it follows from above that the base case holds.

   Inductive Case $(n > 0)$:

   Let $k \in \mathbb{N}$, and assume $a_n = x \displaystyle\prod_{i=0}^{n-1} a_i$.

   Then,

   $$x \prod_{i=0}^{n-1} a_i \cdot a_n = x \prod_{i=0}^{n} a_i \tag{1}$$

   $$= a_{n+1} \tag{2}$$

   Then it follows from above that the recursive sequence of numbers is true for all natural numbers.

Question 2

Question 3

Question 4