CSC236 Term Test 1 Version 2 Solution

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Question 1

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Rough Work:

Define $P(n) : f(n) = 3^n$.

I will use complete inducction to prove that $\forall n \in \mathbb{N},\ P(n)$.

1. Inductive Step

   Let $n = 0$.

   Then, the definition of $f(n)$ tells us $f(n) = 1$.

   Then, we have

   $$f(n) = 3^0 \quad (1)$$
   $$= 3^n \quad (2)$$

   Thus, $P(n)$ follows.

2. Base Case ($n = 0$)
3. Base Case ($n = 1$)
4. Base Case ($n = 2$)
5. Case ($n > 2$)

Question 2

Question 3