

## CPSC 320: TUTORIAL 1

1. Prove that for all reals  $a \neq 1$ ,

$$\sum_{i=0}^n a^i = \frac{a^{n+1} - 1}{a - 1}.$$

2. Prove that for all reals  $a$  and positive integers  $b$ ,

$$(n + a)^b \in \Theta(n^b).$$

3. Prove or disprove,

$$\text{If } f(n) \in O(g(n)) \text{ then } 2^{f(n)} \in O(2^{g(n)}).$$

4. Ask me about the monster problem....