

MA383 - Foundations in Mathematics
Homework Assignment 6
Due *in class* Wednesday, October 29

Remember, your writing and presentation will be graded in addition to the correctness of your solution!

Prove the following results using induction:

1. Problem 3c, page 230.
2. Problem 8b, page 231.
3. Prove $2^n < (n + 2)!$ for all integers $n \geq 0$.
4. If $f(x) = x^n$, prove $f'(x) = nx^{n-1}$ for all $n \in \mathbb{N}$. (Note: You will need to use the product rule from calculus.)
5. Problem 5e, page 256.