

MAT 137Y: Calculus with proofs
Assignment 10 - Comments and common errors

Q2

- A power series must have the form $\sum_{n=0}^{\infty} a_n(x - c)^n$.

You can also skip some terms, such as $\sum_{n=0}^{\infty} b_n(x - c)^{2n}$, because that is equivalent to making some of the original coefficients 0.

However, you cannot use other functions. For example, $\sum_{n=0}^{\infty} a_n|x - c|^n$ is **not** a power series.

Q3

- Use notation carefully. $f^{(137)}(0)$ is a number, not a number times x^{137} .

When you write an equal sign, the thing on the left *must be equal* to the thing on the right. A number equals a number. A function equals a function.

Q4a

- When x is close to a , $f(x) \approx P_n(x)$. They are NOT equal. Do NOT write $f(x) = P_n(x)$.

Q4b

- Review your ε - δ proofs, please. Pay attention to proof structure. Remember the difference between a quantified variable, and a fixed variable. Introduce variables in order.

Q4c

- You may not write a Taylor series for f . We only know f to be C^n , not C^∞ . We can only write the n -th Taylor polynomial.
- When x is close to a , $f(x) \approx P_n(x)$. They are NOT equal. Do NOT write $f(x) = P_n(x)$.