

Hints Final Exam - Real Analysis II**Due Monday May 10th. at 3:00 PM in Lippit 200B**

Since the first two problems of the exam are harder than the rest here are some hints for them. Do what you can!

Good Luck!!

- Problem (1).**
- Fix an x distinct from x_0, x_1, \dots, x_n
 - Define an auxiliary function

$$g(y) = f(y) - p(y) - \frac{M}{(n+1)!}(y-x_0)(y-x_1)\cdots(y-x_n)$$

where M is chosen so that $g(x) = 0$.

- Use Rolle's theorem to show that $M = f^{(n+1)}(c)$ for some $c \in (a, b)$.

- Problem 2).** First part of the problem: Integrate by parts.

Second part of the problem:

- Let $F(x) = \int_x^b f(t) dt$
- Integrate by parts
- Use the fact that if $\int_a^b f(x) dx$ exists then $\lim_{x \rightarrow b^-} \int_x^b f(t) dt = 0$.