Name: _____

- This packet is due at **12:00 pm PDT (noon) on Saturday, May 29**.
- Neatly fill out this packet either directly or on your own paper. Then upload your answers to Canvas. Please clearly number each problem and keep them in order.
- For each problem in this packet, **organize and show all of your work and justification** for your answer.
- Make sure that it is clear what your final answer is. This may mean boxing/circling it or it may mean doing neither.
- If you are required to draw a graph of a function, each axis must be labeled and given a scale.
- I may not be grading every individual problem, but answers will be available on Canvas after the due date.
- I am happy to help you however I can. Here are some options:
  - Come to my office hours (see syllabus).
  - Email me directly at gknapp4@uoregon.edu

1. Find the Taylor polynomial of degree 2 for the function $f(x) = \cos(x)$ centered at $a = \pi$.

2. Compute the Taylor series of $g(x) = \ln(x)$ centered at $a = 1$.

3. Use the Maclaurin Series for $\cos(x)$ and $\sin(x)$ to show that $\cos(-x) = \cos(x)$ and $\sin(-x) = -\sin(x)$. You don't need to derive the Maclaurin series for either function since we did $\cos(x)$ in class and you just did $\sin(x)$ in homework 8a.

4. Find the smallest value of n such that the remainder estimate $|R_n| \leqslant \dfrac{M}{(n+1)!}|x-a|^{n+1}$ for the *Maclaurin Series* for $f(x) = e^{-x}$ yields $|R_n| \leqslant 10^{-3}$ at $x = 3$. Compute $p_n(3)$ using your favorite computational tool.