Math 141 Section 10.8 Study Guide

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Problem 1) Compute the Taylor polynomials of order $0, 1, \ldots, 5$ for each of the following functions, using the center $a = 0$.

- $f(x) = \dfrac{1}{1-x}$
- $f(x) = e^x$
- $f(x) = xe^x$ [**Hint:** Start with a given Taylor polynomial $P_k(x)$ of e^x and modify it in some way.]
- $f(x) = e^{3x}$
- $f(x) = e^{x^2}$
- $f(x) = \cos(x)$
- $f(x) = \sin(x)$
- $f(x) = \ln(1+x)$
- $f(x) = \tan^{-1}(x)$

Problem 2) Compute the Taylor polynomials of order $0, 1, 2, 3$ of $f(x) = x^3 - 2x + 4$, centered at $a = 2$.