MATH 104 TUTORIAL 13

1. In folllowing exercises find the Taylor polynomials of orders 0,1,2,3 generated by f at a

   a. $f(x) = \tan x, \quad a = \pi/4$

   b. $f(x) = \sqrt{1 - x}, \quad a = 0$

2. Find the Maclaurin series for the following functions.

   a. $\dfrac{2 + x}{1 - x}$ b. $\cosh x = \dfrac{e^x + e^{-x}}{2}$

3. In the following exercises find the Taylor series generated by f at x=a.

   a. $f(x) = 2x^3 + x^2 + 3x - 8, \quad a = 1$

   b. $f(x) = 2^x, \quad a = 1$

4. Use power series operations to find the Taylor series at x=0 for the following functions.

   a. $x \cos \pi x$ b. $\dfrac{1}{(1 - x)^2}$ c[a]. $x \tan^{-1} x^2$

5. Find the binomial series fort he functions following.

   a. $(1 + x)^4$ b. $\left(1 - \frac{x}{2}\right)^4$

6. Use series to evaluate the limit. $\lim_{x \to \infty} x^2(e^{-1/x^2} - 1)$