Homework 5

1. Find the Taylor polynomial $T_n(x)$ about base point a for the given function $f(x)$:

   (a) $f(x) = \sqrt{x}, \quad a = 4, \quad n = 3.$

   (b) $f(x) = \ln x, \quad a = 1, \quad n = 5.$

   (c) $f(x) = \sin x, \quad a = \pi, \quad n = 5.$

   (d) $f(x) = \tan x, \quad a = 0, \quad n = 5.$

   (e) $f(x) = \arctan x, \quad a = 0, \quad n = 5.$

   (f) $f(x) = \sqrt[3]{1 - x^2}, \quad a = 3, \quad n = 3.$

2. Use the results of Problem 1 to find approximate numerical values of the following quantities:

   (a) $\sin 3$

   (b) $\ln 1.5$

3. Use the results of Problem 1 to find an approximate numerical value of the integral:

$$\int_2^3 \sqrt[3]{1 - x^2} dx$$