

# MATH 158 Assignment 6, Spring 2010

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Due Monday April 19th at 10:00 am.

Many of these exercises involve calculating definite integrals.  
This will help you review Chapters 8 and 9 in preparation for the final exam.

## 14.4 Series with Positive Terms

Exercises 14, 15, 55, 56, 59.

## 14.5 Taylor Series

Exercises 2, 4, 22, 28, 31, 35, 36 and

Find the Taylor series for  $\cos x$  about  $x = 0$  and determine the radius of convergence  $R$  for  $\cos x$ . Compare this with the series for  $\sin x$ .

## 13.1 Probability Distributions of Continuous Random Variables

Exercises 1, 13, 20, 26, 43 and

If the average waiting time to see a doctor at VGH is 2 hours, what is the probability that you will wait less than one hour? More than 4 hours? [ Assume that the waiting time is exponentially distributed. ]

## 13.2 Expected Value and Standard Deviation

[ Note, the solutions for exercises 15, 17, ..., 27 are out of order. ]

Exercises 2, 8, 13, 20, 28 and

For question 20, sketch the graph of  $f(x)$  showing the median and the average. Is the median less than or greater than the average?

## 13.3 The Normal Distribution

Exercises 1, 5, 10, 20, 21, 22 and

If  $Z$  is a random variable from the standard normal distribution,

$$Pr(0 < Z < 1) = \int_0^1 \frac{e^{-x^2/2}}{\sqrt{2\pi}} dx = 0.341345$$

to six decimal places. Approximate the definite integral using a calculator and Simpson's rule with  $n = 2$  and  $n = 4$  intervals.