PRACTICE1 **Math 152 - Section 99999 Summer 2001**

Midterm 1 Review: Problem Set Review1 due 4/15/09 at 6:00 AM

This problem set is a review for Midterm 1. The midterm will be of approximately the same length (perhaps slightly shorter) and will have a similar mix of problem topics. You should also do problem sets Hmwk #1 and #2 as preparation for the midterm. Note that you should NOT assume that the midterm problems will consist of slight variants of the review problems. Points earned on this review set will be added to your Midterm 1 score.

1.(1 pt) The following sum

$$\sqrt{8+\frac{5}{n}}\frac{5}{n}+\sqrt{8+\frac{10}{n}}\frac{5}{n}+$$
$$\sqrt{8+\frac{15}{n}}\frac{5}{n}+\cdots+\sqrt{8+\frac{5n}{n}}\frac{5}{n}$$

is a right Riemann sum for the definite integral

$$\int_6^b f(x)\,dx$$

where $b =$ _____

and $f(x) =$ _____

It is also a Riemann sum for the definite integral

$$\int_8^c g(x)\,dx$$

where $c =$ _____

and $g(x) =$ _____

The limit of these Riemann sums as $n \to \infty$ is _____

Hint: This is similar to Problem 7 in WeBWorK Problem Set Hmwk #1.

2.(1 pt) Find the following indefinite integrals.

$\int \frac{x}{\sqrt{x+7}}\,dx =$ _____ $+C$

Hint: This is similar to Problem 6 of WeBWorK Hwwk #2.

$\int \frac{\cos(t)}{(7\sin(t)+8)^2}\,dt =$ _____ $+C$

3.(1 pt) Evaluate the following definite integrals using the Fundamental Theorem of Calculus.

$\int_{-18}^{1} s\,|81-s^2|\,ds =$ _____

$\int_0^{81\pi^2} \frac{\sin(\sqrt{x})}{\sqrt{x}}\,dx =$ _____

$\int_9^{18} \frac{t-9}{t^2-18t+82}\,dt =$ _____

4.(1 pt) Find the derivative of the following function

$$F(x) = \int_{\sqrt{x}}^{1} \frac{s^2}{4+3s^4}\,ds$$

using the appropriate form of the Fundamental Theorem of Calculus.

$F'(x) =$ _____

Hint: This is similar to Problem 15 in Problem Set Hmwk #1.

5.(1 pt) The total area enclosed by the graphs of

$$y = 6x^2 - x^3 + x$$
$$y = x^2 + 7x$$

is _____