Mathematics 22 Spring 1998 Discussion Problems I

The first exam will take place on Tuesday, February 10, 4:10–5:10 p.m.
ROOMS
Sections 10–19 Packard 101
Sections 20–21 Packard 258
Sections 22–29 Lewis Lab 270

The relevant sections from the text are 6.1–6.3, 6.5, 7.1–7.4, 7.6, and 7.8 No calculators are required or allowed. If you will be missing the exam, please see your instructor before Tuesday. There will be a workshop Thursday night, February 5, 6:30–7:30 p.m. in Christmas-Saucon 303.

Suggestions. Study with someone else part of the time, but not all of the time. Make an outline containing brief statements of all of the formulas, theorems, and definitions and pictures which explain them. Make sure that you really understand each of the ideas in the outline by explaining the idea (without books, etc.) to someone else (a friend or an instructor). Work the review problems at the end of the chapters. Work the review problems in random order using only a blank piece of paper (i.e. without referring to the book). A problem on the exam won't indicate what section of the book or notes it comes from. So, when studying, it's important to work some problems from the book in random order without knowing what sections they come from.

Remark. This is just a collection of problems. The exam will be very different.

1. Evaluate all of the odd numbered integrals on p. 452 of the text.

2. Evaluate all of the odd numbered integrals 9–41 on p. 477 of the text.

3. Find the volume of the solid obtained by rotating the region bounded by the curve $y = \cos^2 x$, $0 \le x \le \pi/2$, about (a) The x-axis (b) The y-axis

OVER

4. Find the volume of a pyramid with height 10 and rectangular base with dimensions 4 and 7.

5. Find an approximation for the integral which gives the area of the region bounded by the curves $y = x^2 - 4$ and $y = \sin^2(\pi x^2)$ using
(a) The midpoint rule with $n = 4$.
(b) The trapezoidal rule with $n = 4$.
(b) Simpson's rule with $n = 4$.

6. Find the average value of the function $f(x) = \arcsin x$ on the interval $[1/2, 1/\sqrt{2}]$.

ANSWERS (NOT SOLUTIONS)

1. See book 2. See book 3. (a) $3\pi^2/16$ (b) $\pi^2/16$ 4. $280/3$ 5. (a) 13 (b) 10 (c) 8
6. $\frac{\pi}{4-2\sqrt{2}} + \frac{1-\sqrt{3}}{\sqrt{2}-1} - \frac{\pi}{6\sqrt{2}-6}$