HOMEWORK 4 - MATH 152

DUE DATE: Monday, October 11
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. One part of each homework problem will be chosen at random and graded. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Evaluate the integrals
   (a) $\int \sin^4 3x \cos 3x dx$
   (b) $\int \sin^3 x \cos^3 x dx$
   (c) $\int \sin^2 x \cos^4 x dx$
   (d) $\int \tan^5 x \sec^4 x dx$
2. Evaluate the integrals
   (a) $\int_0^{\pi/2} \sin^2 \frac{x}{2} \cos^2 \frac{x}{2} dx$
   (b) $\int_0^{\pi/6} \sec^3 \theta \tan \theta d\theta$
3. Find the volume of the solid generated when the region enclosed by $y = \tan x, y = 1$ and $x = 0$ is revolved about the x-axis.
4. Evaluate the integrals:
   (a) $\int \frac{1}{x^2\sqrt{16-x^2}} dx$
   (b) $\int \frac{\sqrt{1+t^2}}{t} dt$
   (c) $\int \frac{x}{x^2+6x+10} dx$
5. Evaluate the integrals:
   (a) $\int_0^{1/3} \frac{1}{(4-9x^2)^2} dx$
   (b) $\int_1^2 \frac{1}{\sqrt{4x-x^2}} dx$
6. Find the arc length of the curve $y = x^2$ from $x = 0$ to $x = 1$.
7. Evaluate the integrals
   (a) $\int \frac{1}{x^2+3x-4} dx$
   (b) $\int \frac{5x-5}{3x^2-8x-3} dx$
8. Evaluate the integrals
   (a) $\int \frac{x^2-4}{x-1} dx$
   (b) $\int \frac{2x^2-2x-1}{x^3-x^2} dx$