MAT 126 (PRACTICE EXAM-FALL 2003)

THERE ARE 10 QUESTIONS WORTH 20 POINTS EACH.
SHOW ALL WORK!

1. Find the area enclosed by $y^2 = 4x$ and $2x - y = 4$.

2. Find the volume generated by revolving the area bound by $x = y^2$ and x=4 about the line x = -1

3. Find the exact value of the arc length of $y = \dfrac{1}{8}x^4 + \dfrac{1}{4x^2}$ for $1 \le x \le 2$.

4. Find the average value of $f(x) = \tan x$ for $\quad 0 \le x \le \dfrac{\pi}{4}$.

5. A force of 30 N is required to maintain a spring stretched from its natural length of 12cm to 15 cm. How much work is done in stretching the spring from 12 cm to 20 cm?

6. Use integration by parts to find an antiderivative for Arctan(x).

7. Evaluate : $\displaystyle\int_{-\infty}^{\infty} \frac{1}{1+x^2} dx$

8. Evaluate: $\int_0^p |\sin 2x| \, dx$

9. Use the method of partial fractions to find $\int \dfrac{6x^2 + 14x - 20}{x^3 - 4x}\,dx$.

10. Let $F(X) = \int_{-1}^{x} \sqrt{1-t^2}\, dt$.

   a) Use basic geometry to determine the value of F(0)
   b) What is value of F(-1)?
   c) Find $F'(X)$.