EXAM 1 - MATH 152

DATE: Tuesday, September 21
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Find the equation of the tangent line to the graph of the function $f(x) = \frac{\sin x}{x}$ at $x = \pi$.

2. Use integration by parts to compute the indefinite integral $\int x^2 \ln x dx$

3. Sketch the region enclosed by the two curves $y = x, y = 4x$ and $y = -x + 2$ and find its area.

4. Find the volume of the solid that results when the region enclosed by the curves
$$x = y^2, \quad x = y^2$$
is revolved around the y-axis.

5. Find the exact arc length of the curve
$$24xy = y^4 + 48$$
from $y = 2$ to $y = 4$.

6. Find the area of the surface generated by revolving the curve
$$x = \sqrt[3]{y}, \quad 1 \leq y \leq 8,$$
around the x-axis.