MA 241 TEST # 2 Name: _____
May 31, 1999 SS #: _____
Show All Work Seat #: _____

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1. (8 pts each) Evaluate the integrals:
   (a) $\int \sin 5x \cos 6x \, dx$.
   (b) $\int \frac{x^2}{\sqrt{x^2-4}} \, dx$.
   (c) $\int \frac{1}{\sqrt{x^2+6x+10}} \, dx$.
   (d) $\int \frac{2x^3-9x+12}{x^3-4x^2+4x} \, dx$.
   (e) $\int \frac{x^3}{\sqrt{4-9x^2}} \, dx$.
   (f) $\int_0^1 \frac{\ln x}{\sqrt{x}} \, dx$.
   (g) $\int_{-\infty}^{\infty} x^2 e^{-x^2} \, dx$.
   (h) $\int \frac{x^4+1}{x(x^2+1)^2} \, dx$.
2. (8 pts) Set up, but do not evaluate, the Simpson's rule for approximating the integral
$$\int_0^1 e^{-x^2} \, dx,$$
by using 8 subintervals.
3. (8 pts) Evaluate the area of the region bounded by the curves $y = x^2$ and $x = y^2$.
4. (8 pts) Sketch the curve with the polar equation $r^2 = 4 \cos 2\theta$.
5. (6 pts each) The region bounded by curves $y = \cos x$, $y = \sin x$, $x = 0$, and $x = \pi/4$ is rotated about the x-axis.
   (a) Sketch the solid generated by this rotation.
   (b) Set up, but do not evaluate, the integral for the volume of this solid.