page	1	2	3	4	5	6	7	8	9	*total*
scores										

Exam #2, November 11, Calculus II (109), Fall, 2009, W. Stephen Wilson

I agree to complete this exam without unauthorized assistance from any person, materials or device.

Name: _____ Date: _____

1. (1 point) TA Name and section: _____

NO CALCULATORS, NO PAPERS, SHOW WORK. (23 points total)

In case you need them: $\cos(2x) = 2\cos^2(x) - 1 = 1 - 2\sin^2(x)$.

2. (2 points) Compute the slope of the graph of the polar coordinate equation $r = 1 + \cos(\theta)$ at $\theta = \pi/2$.

3. (3 points) Compute the polar coordinates and the xy-coordinates for the point where y is maximal on the graph of the polar coordinate equation $r = 1 + \cos(\theta)$.

4. (3 points) Compute the polar coordinates and the xy-coordinates for the point where x is minimal and y is positive for the graph of the polar coordinate equation $r = 1 + \cos(\theta)$.

5. (2 points) Compute the area enclosed by the graph of the polar coordinate equation $r = 1 + \cos(\theta)$.

6. (2 points) Compute the length of the polar coordinate curve given by the equation $r = 1 + \cos(\theta)$.

7. (2 points) Determine if this integral is improper. If it is, determine if it converges or diverges. Explain all. If it converges, compute it. $\int_0^1 \frac{dx}{\sqrt{x}}$

8. (2 points) Determine if this integral is improper. If it is, determine if it converges or diverges. Explain all. If it converges, compute it. $\int_0^1 \frac{dx}{x}$

9. (2 points) Determine if this integral is improper. If it is, determine if it converges or diverges. Explain all. If it converges, compute it. $\int_0^1 \frac{dx}{x^2}$

10. (2 points) Compute the area enclosed by the graph of the polar coordinate equation $r = 1 + \cos(\theta)$ when $y \geq 0$ and $x \leq 0$.

11. (2 points) Compute the length of the polar coordinate curve given by the equation $r = 1 + \cos(\theta)$ when $y \geq 0$ and $x \leq 0$.