pages	$2-3$	4	5	6	$7-8$	$9-10$	11	*total*
scores								

Exam #2, October 29, Calculus II (109), Fall, 2010, W. Stephen Wilson

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

Name: _____ Date: _____

TA Name and section: _____

NO CALCULATORS, NO PAPERS, SHOW WORK. (26 points total)

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

1. (2 points) Compute the slope of the graph of the polar coordinate equation $r = 1 - \sin(\theta)$ when it crosses the x-axis, $x > 0$.

2. (3 points) Compute the polar coordinates and the xy-coordinates for the point where y is maximal ($x > 0$) on the graph of the polar coordinate equation $r = 1 - \sin(\theta)$.

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

4. (2 points) Compute the area enclosed by the graph of the polar coordinate equation $r = 1 - \sin(\theta)$ when both x and y are greater than or equal to zero $(x, y \geq 0)$.

5. (2 points) Determine if this integral is improper. If it is, determine if it converges or diverges. Explain all. If it converges, compute it. $\int_0^3 \frac{dx}{(x-3)^2}$

6. (2 points) Determine if this integral is improper. If it is, determine if it converges or diverges. Explain all. If it converges, compute it. $\int_4^\infty \frac{dx}{(x-3)^2}$

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. $\int_{-3}^0 \frac{dx}{(x-3)^2}$

8. (2 points) Give a rough sketch of the graph given by the parametric equations: $x = t^3 - 4t$, and $y = 4 - t^2$.

9. (2 points) Give the equation for the tangent line to the graph given by the parametric equations: $x = t^3 - 4t$, and $y = 4 - t^2$, when it passes through the origin the first time (i.e. for the smallest value of t).

10. (2 points) Find the xy-coordinates of the graph for the maximum value of x when $y > 0$ for the curve given by the parametric equations: $x = t^3 - 4t$, and $y = 4 - t^2$.

11. (2 points) Set up the integral for the length of the curve for the part of the graph above the x-axis for the curve given by the parametric equations: $x = t^3 - 4t$, and $y = 4 - t^2$.

12. (2 points) Find the area enclosed by the graph for the part of the graph above the x-axis for the curve given by the parametric equations: $x = t^3 - 4t$, and $y = 4 - t^2$.