Math 1100 Section 4 Final Exam   Name:____________________

Read all directions carefully and show all your work for full credit.

Good Luck!!!

1. (10pts)	
2. (10pts)	
3. (10pts)	
4. (10pts)	
5. (10pts)	
6. (10pts)	
7. (10pts)	
8. (10pts)	
9. (24pts)	
10. (10pts)	
11. (10pts)	
12. (10pts)	
13. (10pts)	
14. (10pts)	
15. (10pts)	
16. (10pts)	
17. (15pts)	
total (189)	

1. (10pts) Find $\lim_{x \to 5} \dfrac{x^2 + 5x - 50}{x^3 - 25x}$.

2. (10pts) If $R(x) = 5x^4 - 6x^3 + 9x$ then find the equation of the tangent line at the point $(1, 8)$.

3. (10pts) If $F(x) = 5x^4 e^x$ then find $F'(x)$.

4. (10pts) If $G(x) = \frac{x^3-1}{2x^2+5}$ then find $G'(x)$.

5. (10pts) If $H(x) = \sqrt[4]{5x^5 - 7x^3}$ then find $H'(x)$.

6. (10pts) Use the limit definition of the derivative to find $W'(x)$ where $W(x) = 4x^2 - 5x + 6$

7. (10pts) If $Y(x) = \sqrt{x^2+1}$ then find $Y''(0)$.

8. (10pts) Find the equation of the tangent line to the curve $y^3x^4 + y^2 = 9$ at the point $(0, 3)$

9. Sketch the graph of the function $P(x) = x^3 - 15x^2 + 75x$ using the following strategy.

(a) (5pts) Find all x and y intercepts.

(b) (5pts) Find where the function is increasing and decreasing.

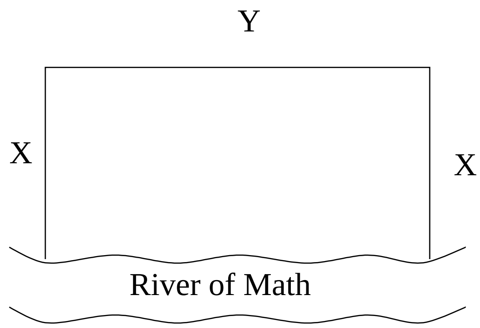
(c) (2pts) Find any relative minimum's and maximum's.

(d) (5pts) Find where the function is concave up and concave down.

(e) (2pts) Find all inflection points

(f) (5pts) Sketch the graph

10. (10pts) Farmer Brown is building a rectangular pen alongside a river (using the river as one side) in which to keep his cows. If he has an area of 20000 ft^2 what is the minimum amount of fencing he can use? See picture below.



11. (10pts) If $Q(x) = 15^{6x^3+8x+9}$ then find $Q'(x)$.

12. (10pts) If $A(x) = log_{10}(5x^3 + 9)$ then find $A'(x)$.

13. (10pts) Find $\int 5x^4 - \sqrt{x^9} - \frac{3}{x} + 10e^x dx$.

14. (10pts) Find $\int x^3 e^{-x^4} dx$

15. (10pts) Find $\int (x^5 - 7x^2) lnx \ dx$

16. (10pts) Find $\int_1^3 4x^3 - 6x + 9dx$

17. (15pts)If $M(x, y, z) = y^2e^{2x} + 5zln(x) + z^2y^3$ then find $M_x, M_y,$ *and* M_z and evaluate each at the point $(1, 3, 2)$.