**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**January 31st, 2012**

**AP Calculus 1, Mrs. Sulkes**

**Review for Test #2, Q3**

**Topics:** *Optimization, Differentials, L’Hopital’s, Antiderivatives (general and particular solutions), Sigma Rules*

1. 
2. -1/2
3. 0
4. ½
5. 1
6. DNE
7. The radius of a circular disk is measured as 24 cm with a maximum error in measurement of 0.2 cm. Use differentials to estimate the maximum error in the calculated area of the disk.
8. 
9. 
10. 
11. 
12. 
13. 
14. ½
15. 
16. -1/2
17. 
18. DNE
19. 
20. A rectangular storage container with an open top is to have a volume of 10 The length of its base is twice the width. Material for the base costs $10 per square meter. Material for the sides costs $6 per square meter. Find the cost of materials for the cheapest such container.

For 6 – 8, find the antiderivative (indefinite integral). Write your final answer in simplified form using positive exponents.

6. 

7. 

8.



9. A particle moves along the x-axis in such a way that its acceleration at time is given by  for . At time , the velocity of the particle is  and its position is .

1. Write an equation for the position  of the particle.
2. For what value(s) of does the particle change direction? Prove your answer using analytical work.

10. Let be a function such that . Find  if the graph of  is tangent to the line  at the point (0, -2). Show all steps.

For 11 – 12, use sigma rules to evaluate:

11.  12. 

Other good review problems: p. 380 #3 – 13 odd, 21