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

**February 6th, 2013**

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

6. 

7. 

8.



9. Solve the differential equation given:

, , 

10. 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.

11. Use Sigma rules to evaluate: 