

Math 261: Calculus - Test # 3(Part Two)

Los Angeles City College - Spring 2008

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Name_____

1. For the following function, find all the local as well as absolute maximas and minimas (20 pts.)

$$f(x) = x(1-x)^{\frac{2}{3}} \quad x \in [-1, 2]$$

2. Check and prove whether the assumptions of the mean value theorem are satisfied and if they are, then find values of c for $f(x) = 4\sqrt{2+x} - x^2$ where $x \in [0, 3]$ (20 pts.)
3. A cylindrical can is to be made to hold 1 gallon of oil. Find the dimensions that will minimize the cost of the metal to manufacture the can? (20 pts.)
4. Use Newton's approximation method to find one root of $2 \cos 2x - x^2 = 0$ with three decimal place accuracy (15 pts.)
5. Find the following limit: (10 pts.)

$$\lim_{x \rightarrow 0} x^2 \csc^2 x$$

6. Find the following limit: (15 pts.)

$$\lim_{x \rightarrow 0^+} \left(\frac{1}{x} - \frac{1}{\sin x} \right)$$