UNVERSITY OF BUEA

FACULTY OF ENGINEERING

CEF201 TEST II, Wednesday February 15,2012

Duration: 1.5 hours

INSTRCTIONS

Answer all questions. All necessary work must be shown and must be neatly and orderly presented.

1. let

(I) show that f is continuous at the point x = 0. (2 marks)

(ii) Find f '(0) and show that f ' is continuous at x = 0. (3 marks)

(iii) Find f "(0) and show that the function f " is not continuous at = 0. (4 marks)

(iv) Find the equation of the tangent of the graphs y = f(x) and y = f '(x) at the point x = 0. (2 marks)

2. Find the degree two Taylor approximation to square root of26 based on the values of f (x) = square root of x at 25. Estimate the size of the error and specify an interval that you can be sure contains square root of 26. (4 marks)

3. State the Mean Value Theorem for Derivatives. Show that if r > 1 and -1 >= x < 0 then$(1+x)^r$

4. (i) Locate and classify all the critical points of the function $f(x) = x^2$

(ii) Determine the intervals of increase and decrease, the local etreme values and the concativity of the function f(x) = x4 – 2x3 + 1. Use this information to sketch the graph of f. (7 marks)

5. Compute

lim(sin x)