KENYA AERONAUTICAL COLLEGE

END STAGE EXAMS

SUBJECT : MATHEMATICS

CLASS : DIP 10S

TIME : 3 HRS

DATE : JULY 2013

**INSTRUCTIONS: ANSWER ALL THE QUESTIONS**

Answer ALL the questions

1. (a) Given that 

 Show that

  (10 marks)

 (b) Given the function 

 Find the stationary points and their nature. (10 marks)

2. (a) Calculate the value of Tan 150 without using calculator or table. (3 marks)

 (b) Show that Tan  (8 marks)

 (c) Express in the form hence solve the equation

8 sin  + 14 cos= 7 for    2radians. (9mks)

3. (a) Expandup to the term in x. Hence determine the value of  by

 Substituting x = 1/17 giving your answer correct to 4 decimal places. (8mks)

 (b) (i) Use demoirve’s theorem to expand cos 7as a polynomial in 

 cos.

 (ii) Hence if x = 2 cos, prove that = 2. (12mks)

4. (a) Find the maclaurin’s series expansion of 1n in ascending power of x

 up to and including x4 and hence obtain 1ngiving your answer

 correct to 5 decimal places. (12mks)

 (b) Evaluate the following integrals

 (i) dx

 (ii) d (8mks)

5. (a) Find Maclarin’s series expansion of f= ein ascending powers of x as far as therm

 in xhence evaluate:

 dx giving your answer correct to 4 d.p (8mks)

 (b) Find root mean square value of the function:

 Y = 3 sin 5t + 2 cos 3t between t=0 and t= (4mks)

 (c) Find the volume generated when the plane figure bounded by y= 5 cos 2x,

 the x-axis and ordinates at x=0 and x= rotates about x-axis through a complete

 revolution. (6mks)

  **WISH YOU ALL THE BEST**