KING SAUD UNIVERSITY **Second Semester 36/37**

Math Department **March the second 2016**

Midterm1106 Time: 90mn

Question 1(2+3+3)

a) Find the value of the constant c such that

$$\sum_{1}^{10}(k^2 + 3c) = 445$$

b) Evaluate the indefinite integral $\int x^3\, cosx^4(sinx^4 + 1)^5 dx$

c) Find the values of z that satisfy the mean value theorem for the function $f(x) = 3x^2 + 1$ on [0, 2].

Question 2(3+2)

a) Approximate the integral $\int_0^2 \frac{dx}{1+x^4}$ using Simpson's rule with n=4

b) If $f(x) = \sqrt{lnx} + log_2(\tan^{-1} x)\,, x > 1$ find $f'(x)$.

Question 3(3+3)

a) Find y' if $y = x^{coshx}\,, x > 0$

b) Evaluate the integral $\int 2^x 3^{2^x} dx$

Question 4(3+3)

a) Compute the integral $\int \frac{2dx}{\sqrt{3+4x^2}}$

b) Evaluate $\int \frac{dx}{x\sqrt{x^3-8}}\,, x > 2.$