Mathematics in Economics - Written Exam – Part 2 – 70 points

Name:……

1) Find derivatives:

a) $y = 10x^4 cosx$

b) $y = \frac{x}{lnx}$

c) $y = sin(x^3 + 2x + 1)$ 9 points

2) Find maxima and minima of the function of two variables:

$f(x, y) = 2x^2 + 4y^2 - 10x + 16y + 25$

10 points

3) Find Maclaurin series of $y = cosx$. 8 points

4) Find maxima/minima of the function: $y = x^3 + 24x + 16.$ 9 points

5) Find the increment of the Cobb-Douglas function $Q = 10K^{0.5}L^{0.5}$ for

K = 9, L = 25, dK = 0.1 and dL = 0.25. 8 points

6) Find: $\int (x + 3)e^x dx$ 8 points

7) Find: $\int_1^3 (x^2 + 5x)dx$ 8 points

8) Find the area between $y = 3x$ and $y = x^2$. 10 points