



Istanbul University-Cerrahpasa
Engineering Faculty
Final Exam – Spring 2019

Course Title: **Calculus II— Sample Exam**

Student's name:

Date of Examination: 10.04.2019

Student's ID:

Time duration: 75 Minutes

Q.1) Find the Maclaurin series for the function $f(x) = \ln((x+1)(2x+1))$.

(25 Points)

Q.2) If $u = xe^{ty}$, where $x = \alpha^2\beta$, $y = \beta^2\gamma$, and $t = \gamma^2\alpha$, find the partial derivatives $\frac{\partial u}{\partial \alpha}$, $\frac{\partial u}{\partial \beta}$, $\frac{\partial u}{\partial \gamma}$ when $\alpha = -1$, $\beta = 2$, $\gamma = 1$. (25 Points)

Q.3) A company produces two types of computers; desktops and laptops. Its revenue R (in thousand dollars) is given by

$$R(x, y) = x(20 - 5x) + y(4 - 2y)$$

where x and y are the number of desktops and laptops, respectively, produced and sold. The corresponding cost (in thousand dollars) of producing these units is given by

$$C(x, y) = 2xy + 4$$

What should x and y be to maximize profit? What is the maximum profit? (25 Points)

Çözüm:

Q.4) Find the volume of the solid that lies under the paraboloid $z = x^2 + y^2$, above the xy -plane, and inside the cylinder $x^2 + y^2 = 2x$. (25 Points)

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