DEPARTMENT OF MATHEMATICS

MA 376 Optimization Techniques

Quiz One

Date: February, 2017 *Time*: 1hr:30

Leave all answers to 4 d.p.

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1. Find the local maximum and minimum of the $f(x_1, x_2)$.

$$f(x_1, x_2) = 2x_1^3/3 - 2x_1x_2 - 5x_1 + 2x_2^2 + 4x_2 + 5$$

2. Minimize the following unimodal function $f(x) = x^2 + 2e^{-x}$ by the use of the DSC Method. Take initial guess $x^{(0)} = 0$ and initial step length $\Delta x = 0.1$. Perform 1 Cycle.

3. Minimize the following unimodal function $f(x) = x\sqrt{2+x}$ by the use of the Powell's Method. Take initial guess $x^{(0)} = -2$ and initial step length $\Delta x = 0.1$. Perform 1 Cycle.

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