國立中山大學 97 學年度第 2 學期資訊工程學系資工數學

Quiz #6
2009/05/13

1. Method of Steepest Descent

   Do 3 steepest descent steps when: $f(X) = 3x_1^2 + 2x_2^2 - 12x_1 + 16x_2$, $x_0 = \begin{bmatrix} 1 & 1 \end{bmatrix}^T$. (50%)

2. Regions and Constraints (20%)

Describe and graph the region in the first quadrant of the x_1x_2-plane determined by the inequalities:

$$2.0x_1 + 6.0x_2 \leq 18.0$$
$$5.0x_1 + 2.5x_2 \leq 20.0$$

3. (**Minimum cost**) Hardbrick, Inc., has two kilns. Kiln I can produce 3000 grey bricks, 2000 red bricks, and 300 glazed brick daily. For Kiln II the corresponding figures are 2000, 5000, and 1500. Daily operating costs of Kilns I and II are $400 and $600, respectively. Find the number of days of operation of each kiln so that the operation cost in filling an order of 18000 gray, 34000 red, and 9000 glazed bricks is minimized. (30%)