

$$\nabla f(x_1, x_2) = \begin{bmatrix} 1 + 4x_1 + 2x_2 \\ -1 + 2x_1 + 2x_2 \end{bmatrix}, \quad \nabla f(\hat{x}) = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$$

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b) [20 ptos.] Realice dos iteraciones del método de descenso del gradiente para encontrar el valor de x que minimiza la función, con el punto inicial de búsqueda $x_a = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$.

Nota: Puede usar la derivada de la función $f(x + \lambda d)$ para encontrar λ .

$$\frac{\int (f(\lambda d))}{\int \lambda} = 2\lambda - 2 = 0$$

$$2\lambda = 2$$

$$\lambda = 1 - 7 \text{ Parto file months}$$

$$\chi_b = \chi_a + 1 \cdot \begin{bmatrix} -1 \end{bmatrix}$$

$$\chi_{b} = \begin{bmatrix} -\frac{1}{1} \\ \frac{1}{1} \end{bmatrix}$$

$$\frac{1}{1} \text{ for } 2$$

$$\frac{1}{7} \text{ for } x_{0}, x_{0} = \begin{bmatrix} \frac{1}{1} + 1x_{0} + 2x_{0} \\ -1 + 2x_{0} + 1x_{0} \end{bmatrix}$$

$$\frac{1}{7} \text{ for } x_{0}, x_{0} = \frac{1}{1} - \frac{1}{2} + \frac{1}{2} = \frac{1}{2}$$

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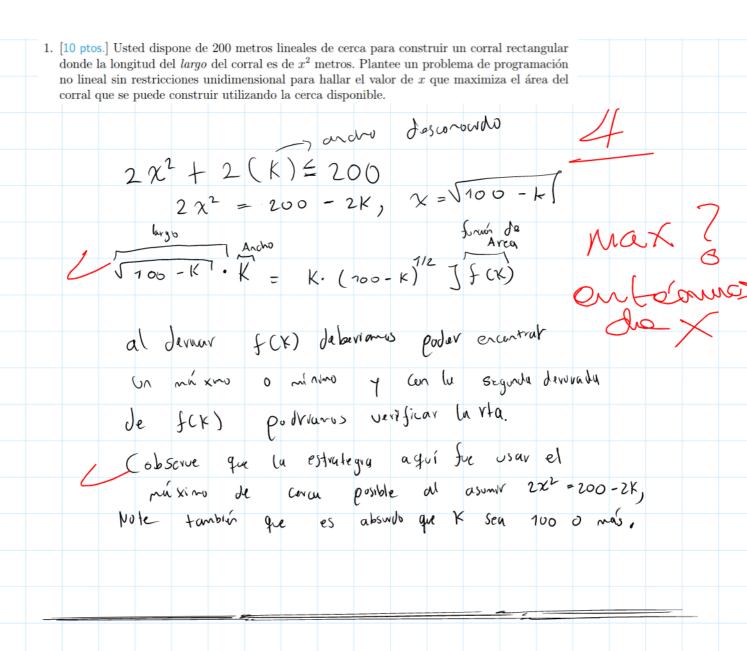
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$$\frac{1}{7} \text{ for } x_{0} =$$



4. [20 ptos.] Dado el siguiente problema de programación no lineal,

$$\min \ x^3 - x^2 - x$$

Utilice el método de ajuste cuadrático con los puntos iniciales $x_1=0, x_2=2$ y $x_3=4$ para encontrar el mínimo de la función en \mathbb{R}^+ . Realice al menos dos iteraciones, indicando claramente el procedimiento realizado.

