Optimization - Exercises

Joris LIMONIER

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Contents

1 In-class proof January 25, 2021

$$w_{k+1} = w_k - \alpha_k g_k(w_k, \xi_k)$$

F is L-smooth.

$$F(w_{k+1}) \leq F(w_k) + \nabla F(w_k)^T (w_{k+1} - w_k) + \frac{1}{2} L \alpha_k^2 \|g_k(w_k, \xi_k)\|^2$$

$$\implies F(w_{k+1}) \leq F(w_k) - \alpha_k \nabla F(w_k)^T g_k(w_k, \xi_k) + \frac{1}{2} L \alpha_k^2 \|g_k(w_k, \xi_k)\|^2$$