

Pour / for P10.2.3:

Par Taylor / By Taylor's expansion:

$$\phi(x_{k-1} + \alpha_k p_k) = \phi(x_{k-1}) + \alpha_k \nabla(\phi(x_{k-1}))^T p_k + \frac{1}{2} \alpha_k^2 p_k^T A p_k.$$

Puisque / Since

$$-\nabla(\phi(x_{k-1})) = b - Ax_{k-1} = r_{k-1}$$

et / and

$$a_k = p_k^T r_{k-1} / p_k^T A p_k,$$

on obtient (10.2.3) / we obtain (10.2.3).

Fournir les détails / Supply the details.