2023 - 04 - 17

Show that if $\phi: \mathbb{R}^n \to \mathbb{R}$ is an even function and

$$2H_{\phi}(\tilde{x})\tilde{x} = \nabla\phi(\tilde{x})$$

then unguarded Newton iteration for optimization maps \tilde{x} to $-\tilde{x}$ and viceversa.