$$\nabla f(\mathbf{x}_\star) = 0$$

$$\text{upper}[\nabla^2 f(\mathbf{x}_\star)] = 0$$

A

$$\mathbf{d} = \text{diag}[\nabla^2 f(\mathbf{x}_\star)] < 0$$

$$f(\mathbf{x}_\star) > \max_t f(\mathbf{x}_t)$$

B

$$f(\mathbf{x}_\star) > f(\mathbf{x})$$

C

- A and B1 denote the fact that $\mathbf{x}_\star$ is a local maximizer
- B2 and C approximate the fact that $\mathbf{x}_\star$ is a global maximizer