Test 5

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Exercise 1

The derived convergence condition is $||x_0 - x^\star|| > \frac{1}{2}||x_0 - x^\star||^2 \Rightarrow ||x_0 - x^\star|| \in [0, 2)$
$||(3, 1, 1)^T - (2, 0, 1)^T|| < 2$
Answer: d

Exercise 2

Let's $H_0 = [\nabla^2 f(x)]^{-1} = A^{-1}$, then $(x_1 - x_0) - A^{-1}(Ax_1 - Ax_2) = 0 \Rightarrow H_0 = H_1 = H_k = A^{-1}$
Answer: c

Exercise 3

Answer: a

Exercise 4

Since we try to minimize $||w||$ and 3-rd dimension in dataset is constant, 3-rd dimension in $||w||$ should be 0.
Answer: c

Exercise 5

Answer: d