# Nonlinear Least Squares

6 questions

1 point

1.

Which of the following cost functions can be minimized in the framework of linear least squares?

- $f(X) = \|Ax - b\|_2^2$
- $f(X) = \|Ax - b\|_1$
- $f(X) = \|xx^T - b\|_2$

1 point

2.

Consider the problem of minimizing $f(x) = \|Ax - b\|_2^2$, where the rank of $A$ is larger than the dimension of $x$. Which of the following corresponds to the optimality condition?

- $x = b$
- $A^T Ax = A^T b$
- $x = AA^T b$

1 point

3.

Minimizing $\|f(x) - b\|^2$ is prone, in general, to the existence of local minima.

- True
- False

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1 point

4.

Examples of nonlinear least squares problems include

- [ ] Line fitting
- [ ] Perspective-n-Point
- [ ] Triangulation

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1 point

5.

Assume we want to minimize $\|f(x) - b\|_2^2$. Then, the (globally) optimal solution satisfies

- $\frac{\partial f(x)}{\partial x}^T x = \frac{\partial f(x)}{\partial x}^T b$
- $\frac{\partial f(x)}{\partial x}^T f(x) = \frac{\partial f(x)}{\partial x}^T x$
- $\frac{\partial f(x)}{\partial x}^T f(x) = \frac{\partial f(x)}{\partial x}^T b$

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1 point

6.

If a point satisfies the condition of the previous question then it is globally optimal.

- ○ True
- ○ False

5 questions unanswered

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