Tutorial 4 - Gradient Descent

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Carleton University

Monday 4th October, 2021

Disclaimer: Tutorials will be Recorded

Privacy Preservation:

- Ask questions in the chat[1]
- Keep video off

Note: If the above *hinders your ability to learn* $\wedge$ *violates your privacy*, please let me/Dr. Green know ASAP and video will be post-processed accordingly.

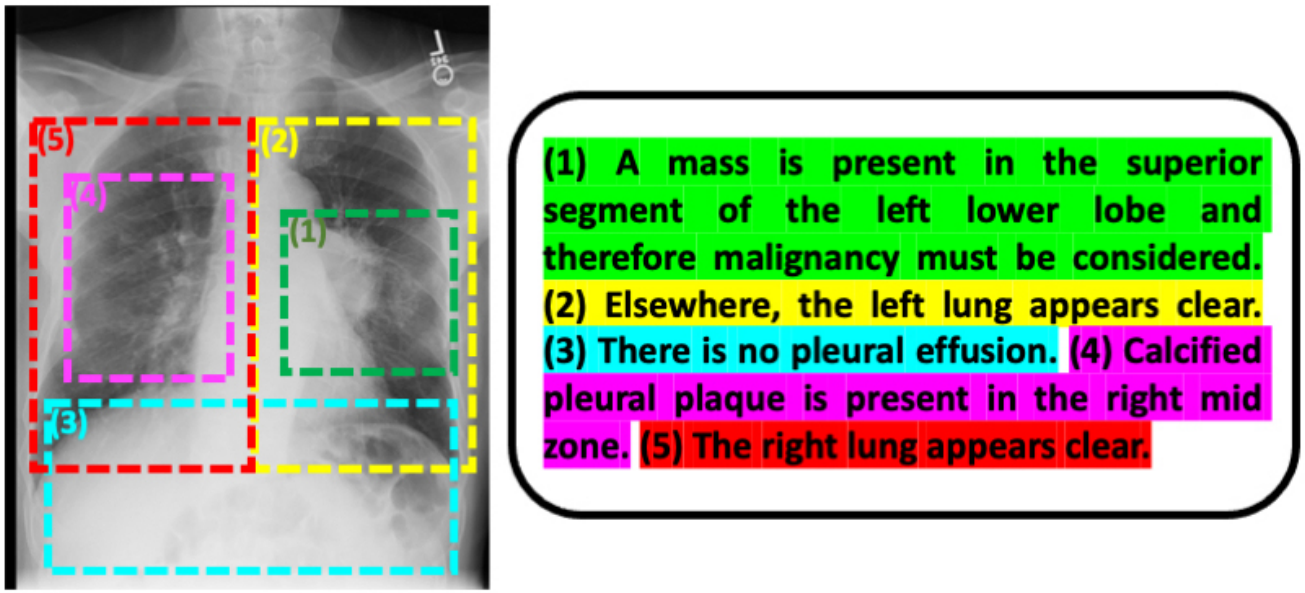
[1] I encourage unmuted/voice-based questions at any time, but know that this isn't explicitly privacy-preserving

ML Weekly

Recent news events from the ML community

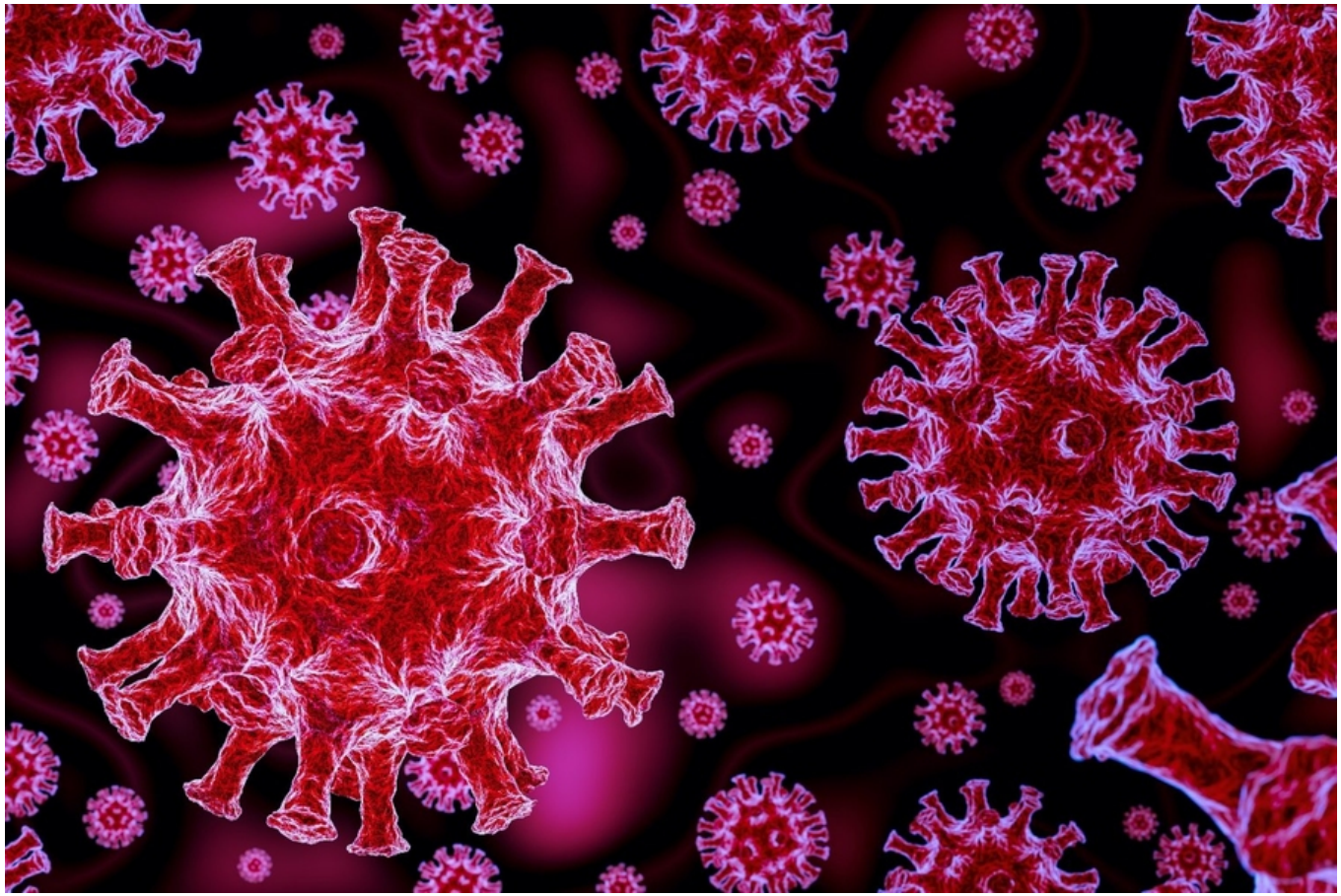
ML Weekly

1. **(Interpretability of ML)** Using AI and old reports to understand new medical images



ML Weekly

1. **(Interpretability of ML)** Using AI and old reports to understand new medical images
2. **(Deep Learning)** Deep learning helps predict new drug combinations to fight Covid-19



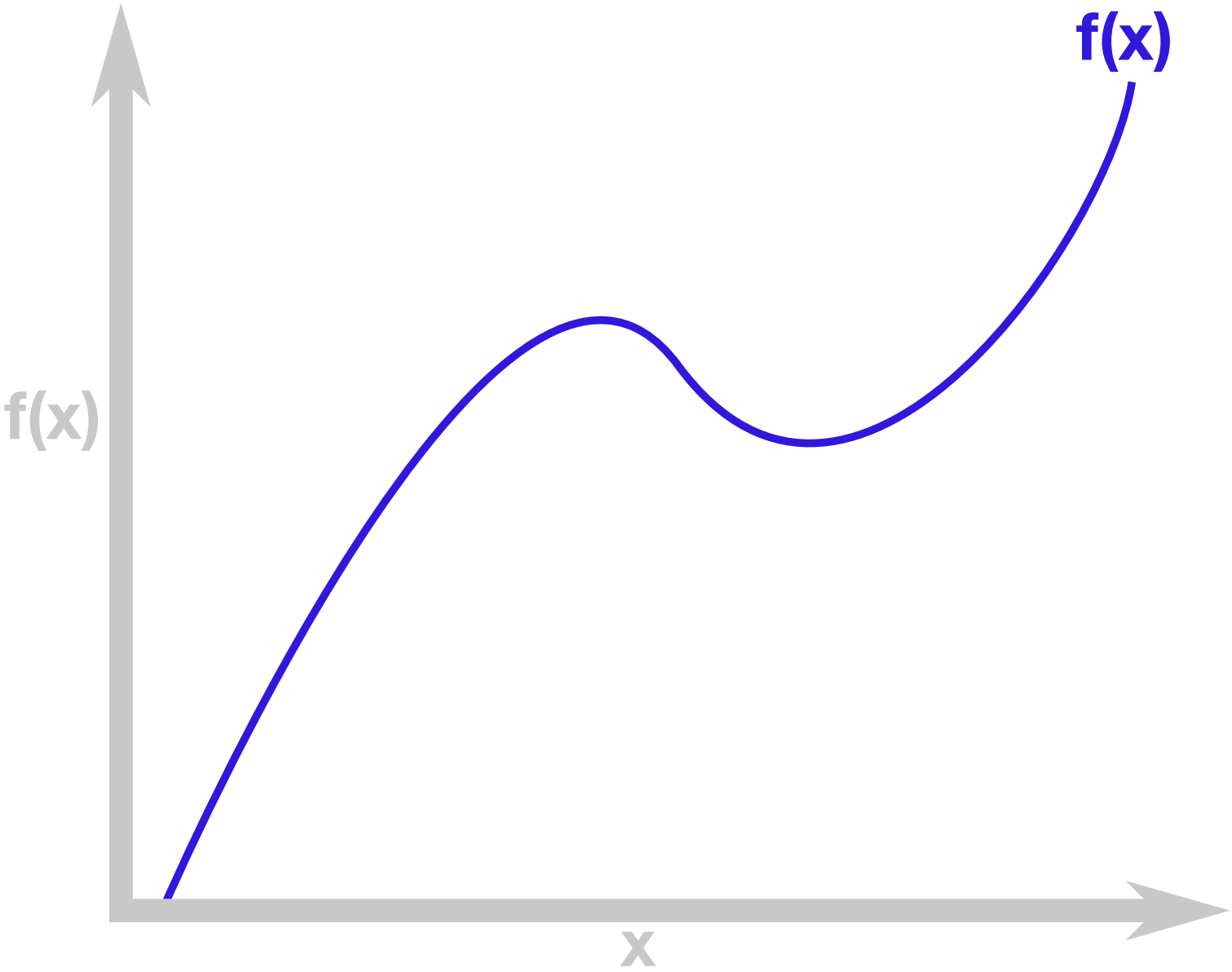
ML Weekly

1. **(Interpretability of ML)** Using AI and old reports to understand new medical images
2. **(Deep Learning)** Deep learning helps predict new drug combinations to fight Covid-19
3. **(ML)** AI can predict if it will rain in two hours' time

Tutorial Intuition

Building an Intuition for the Concepts of this Tutorial

What is Gradient Descent?



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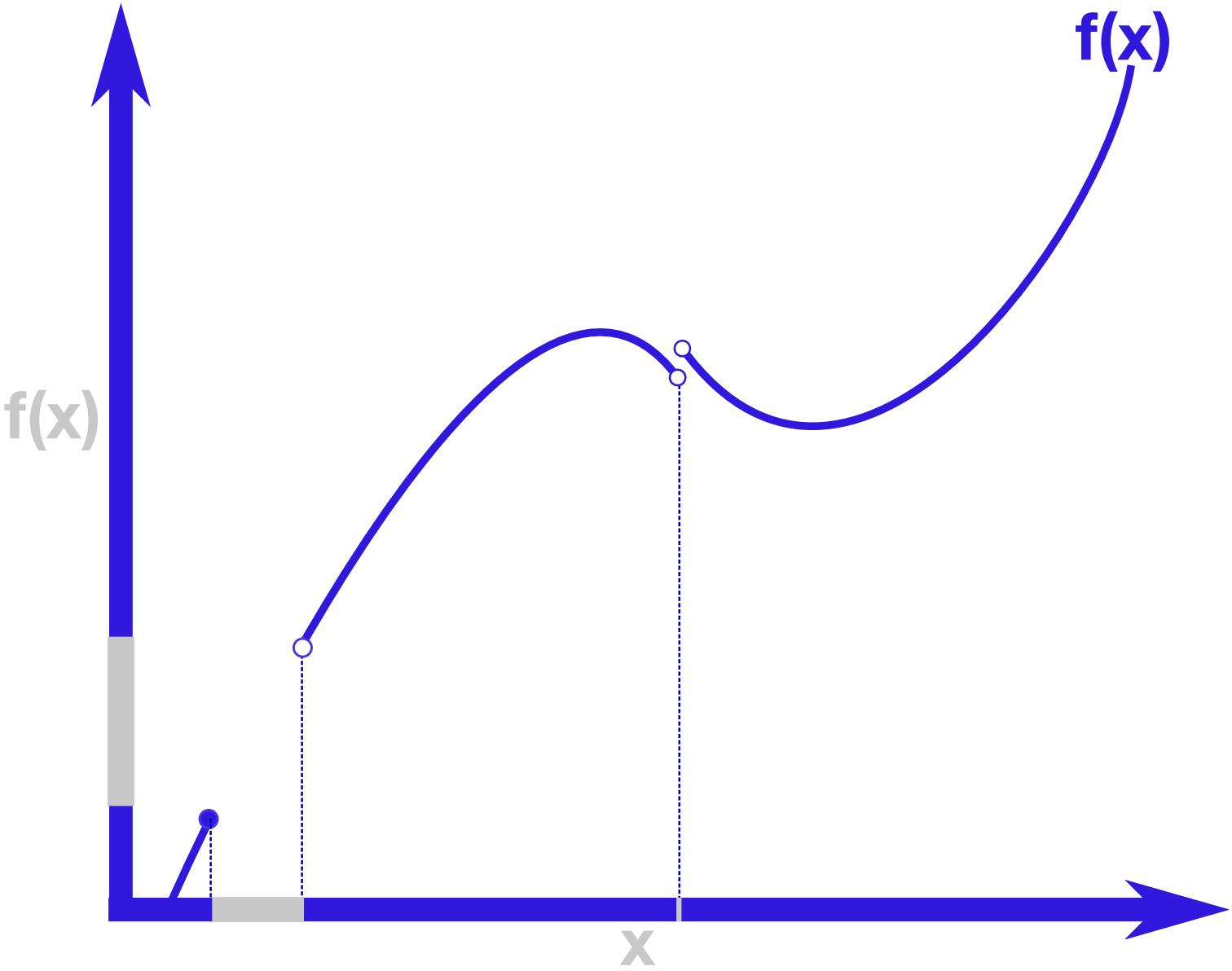

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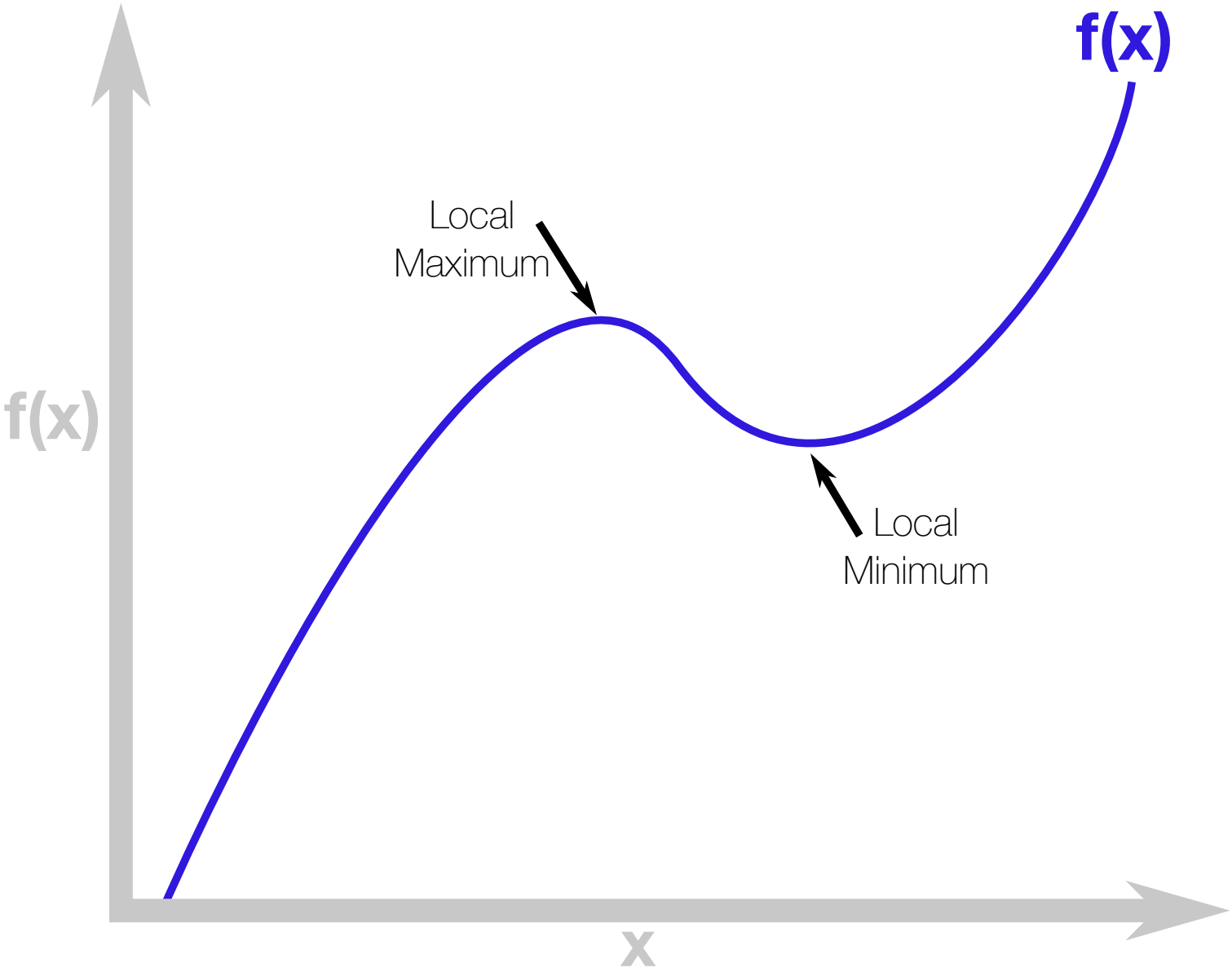

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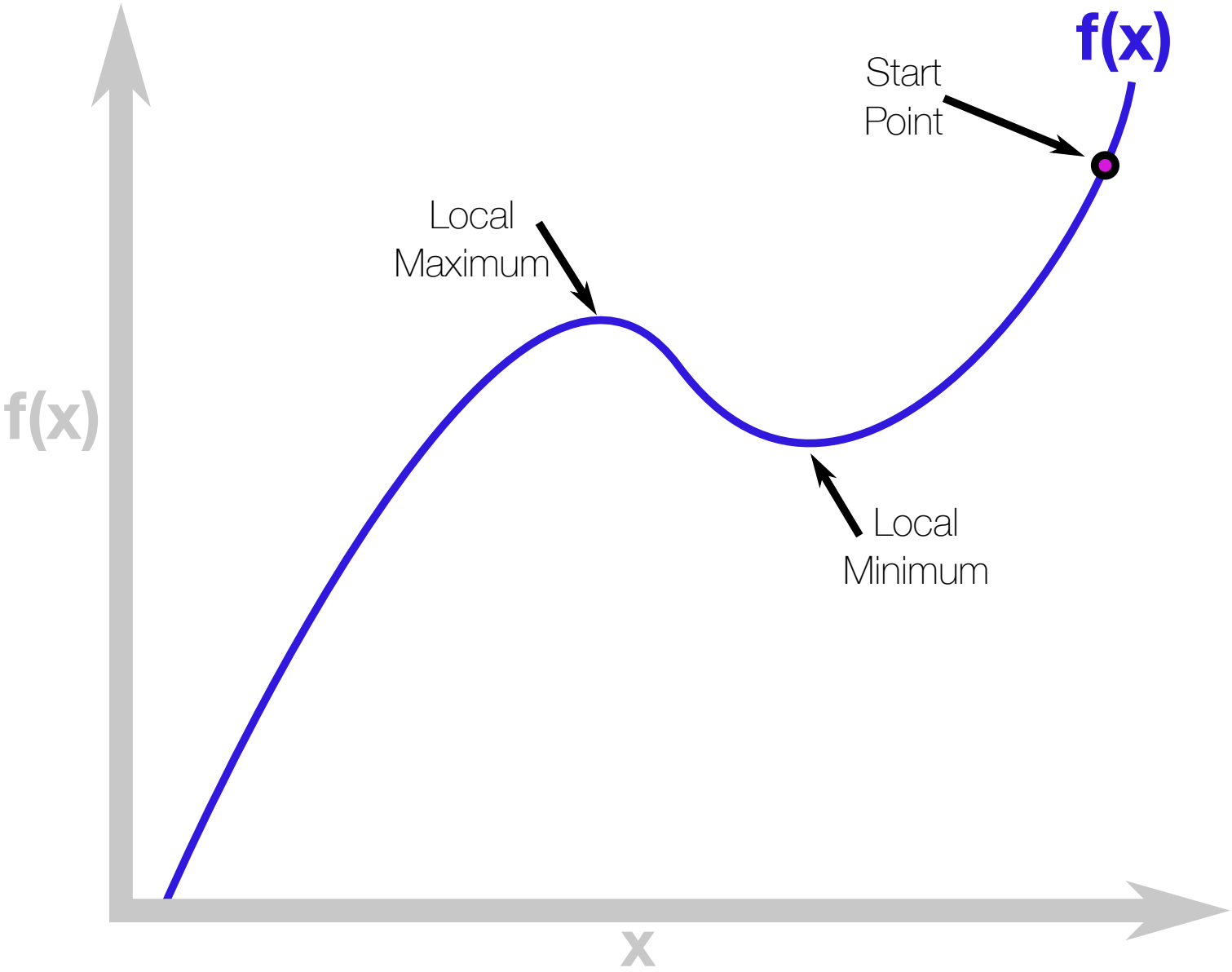

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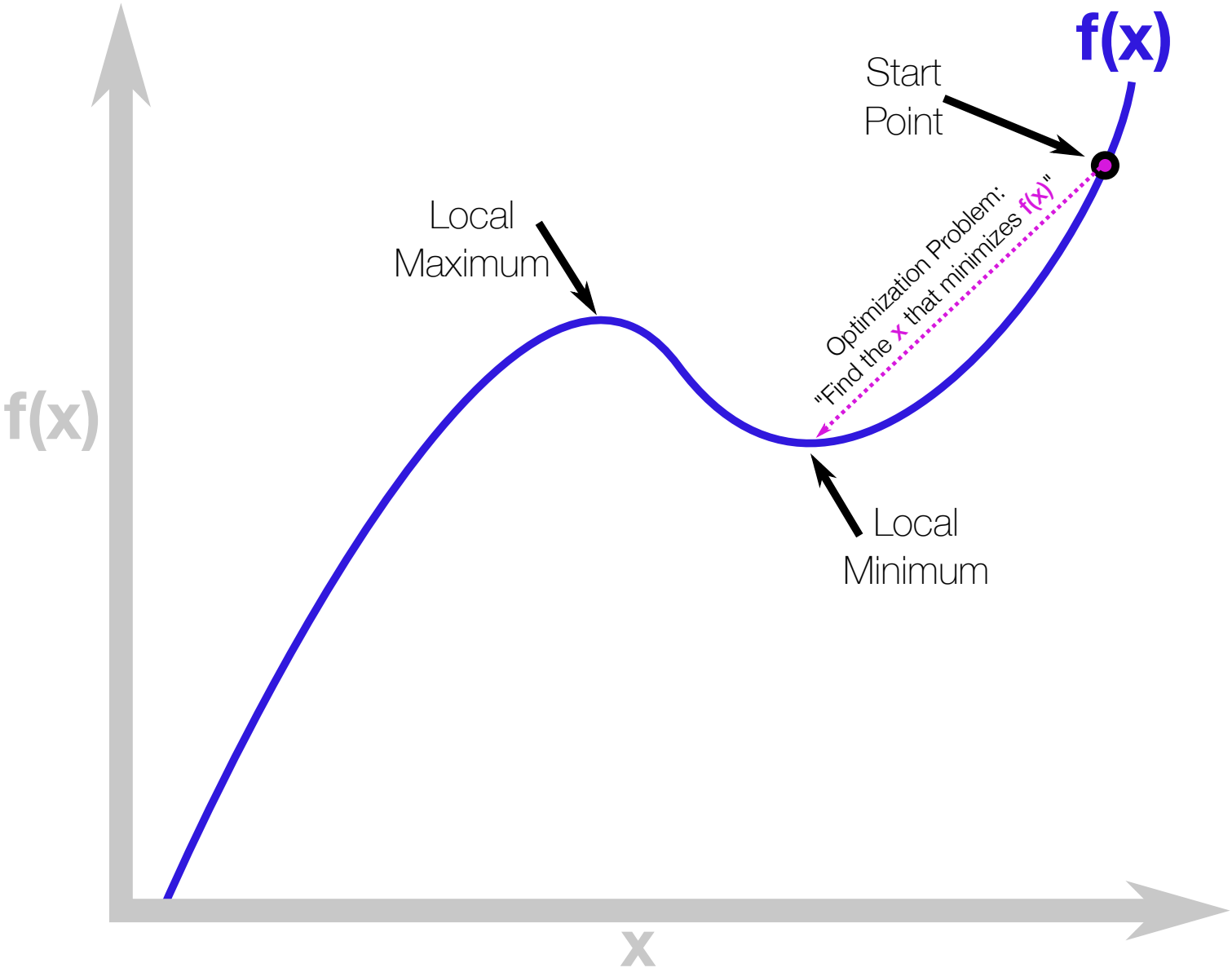

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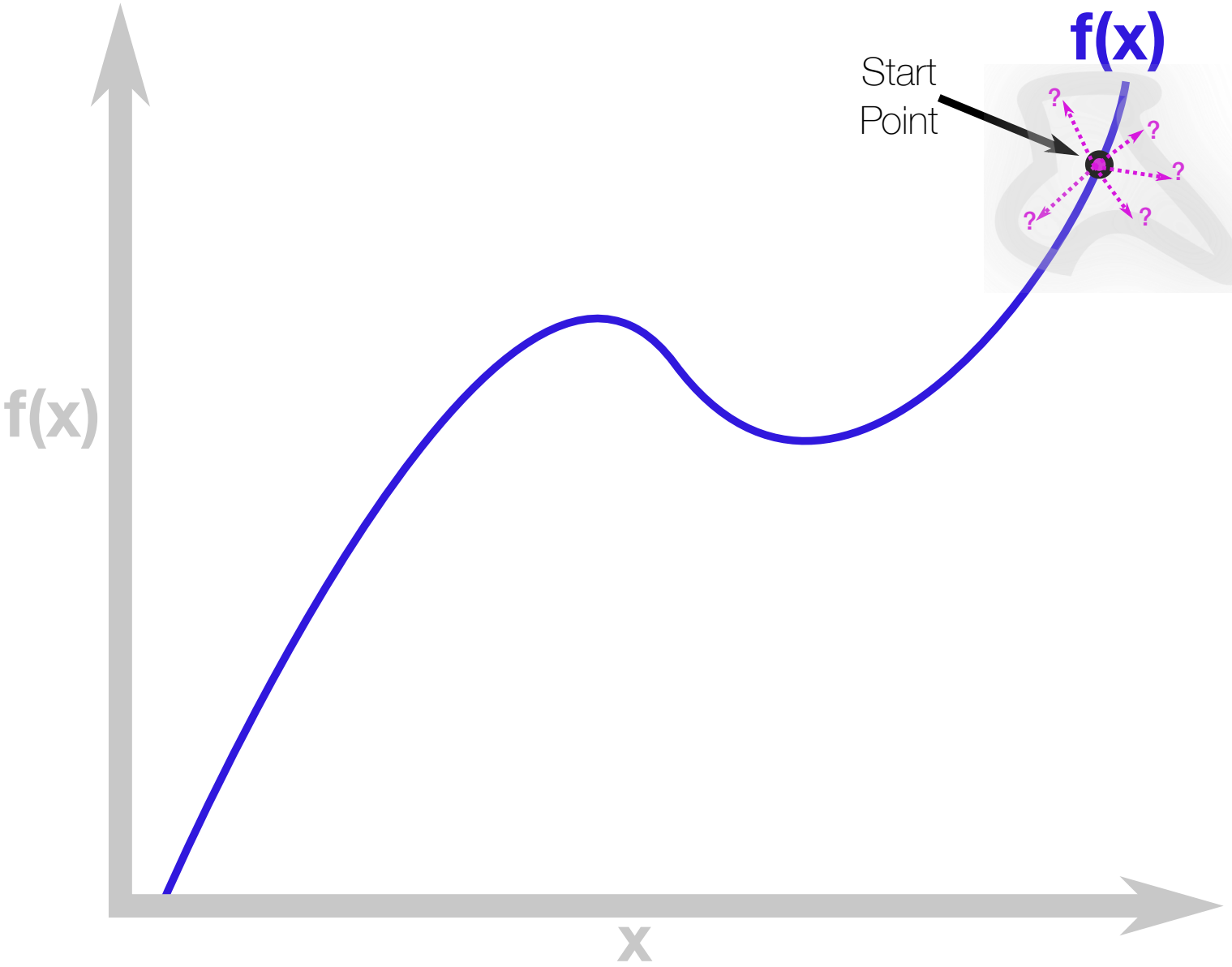

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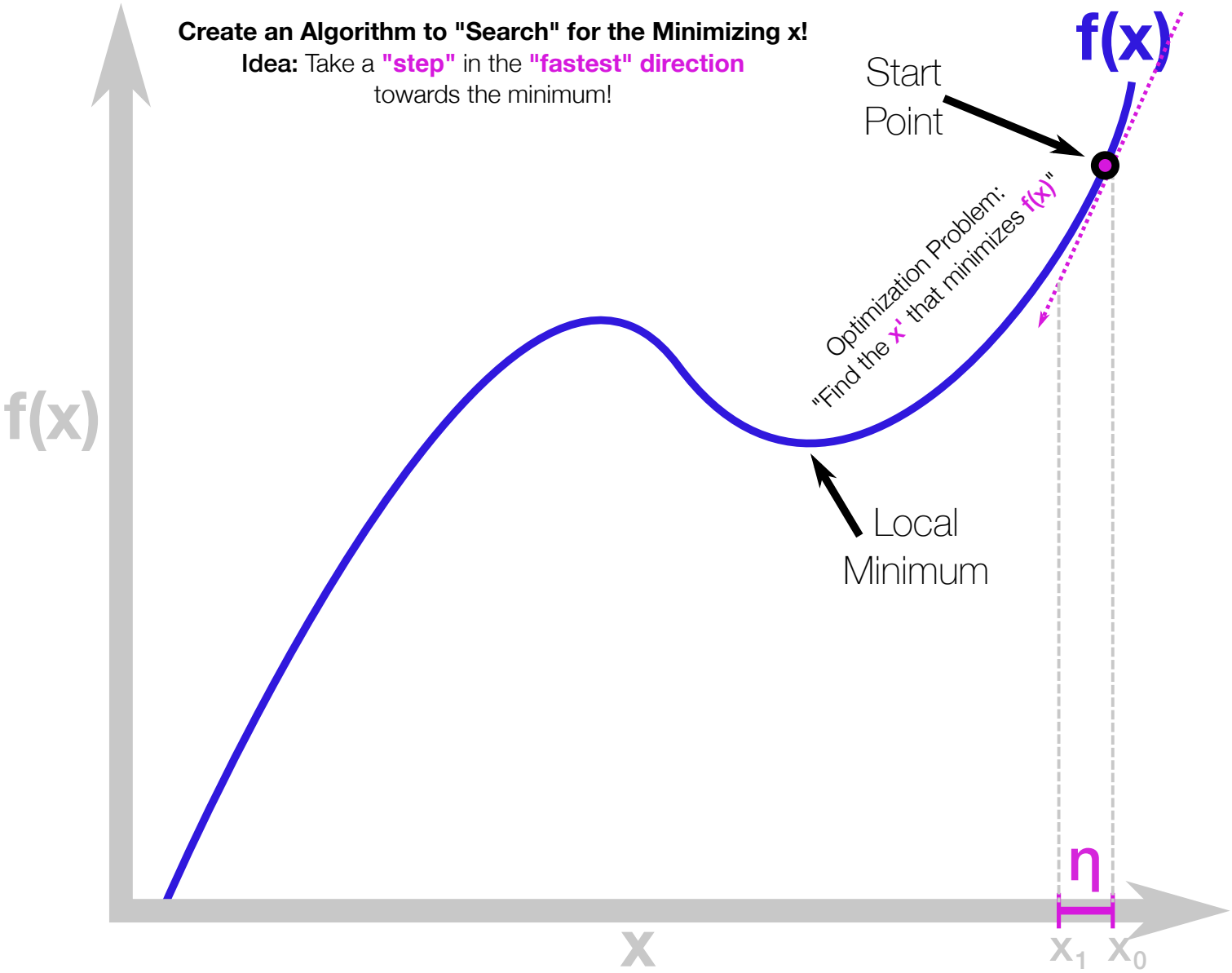

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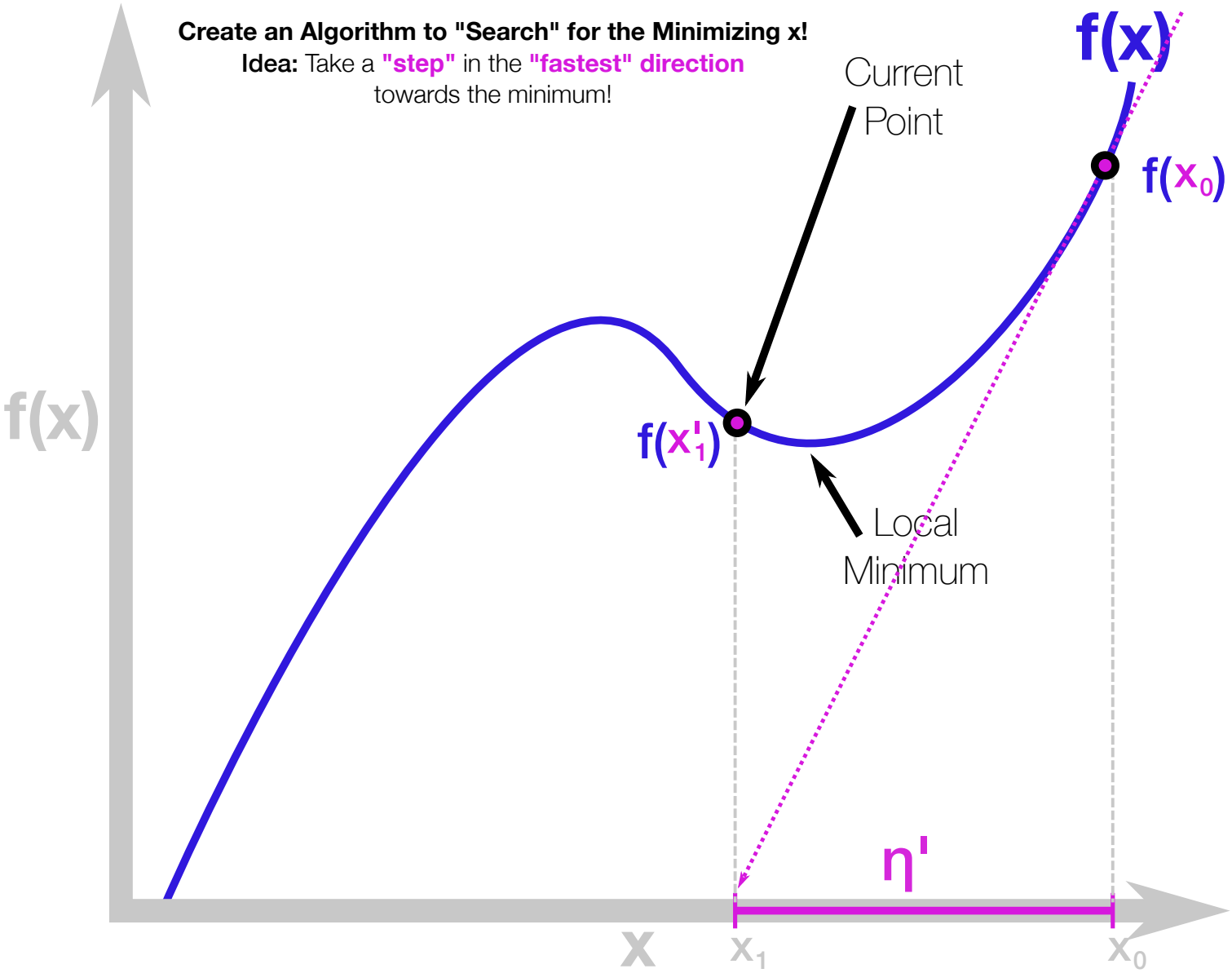

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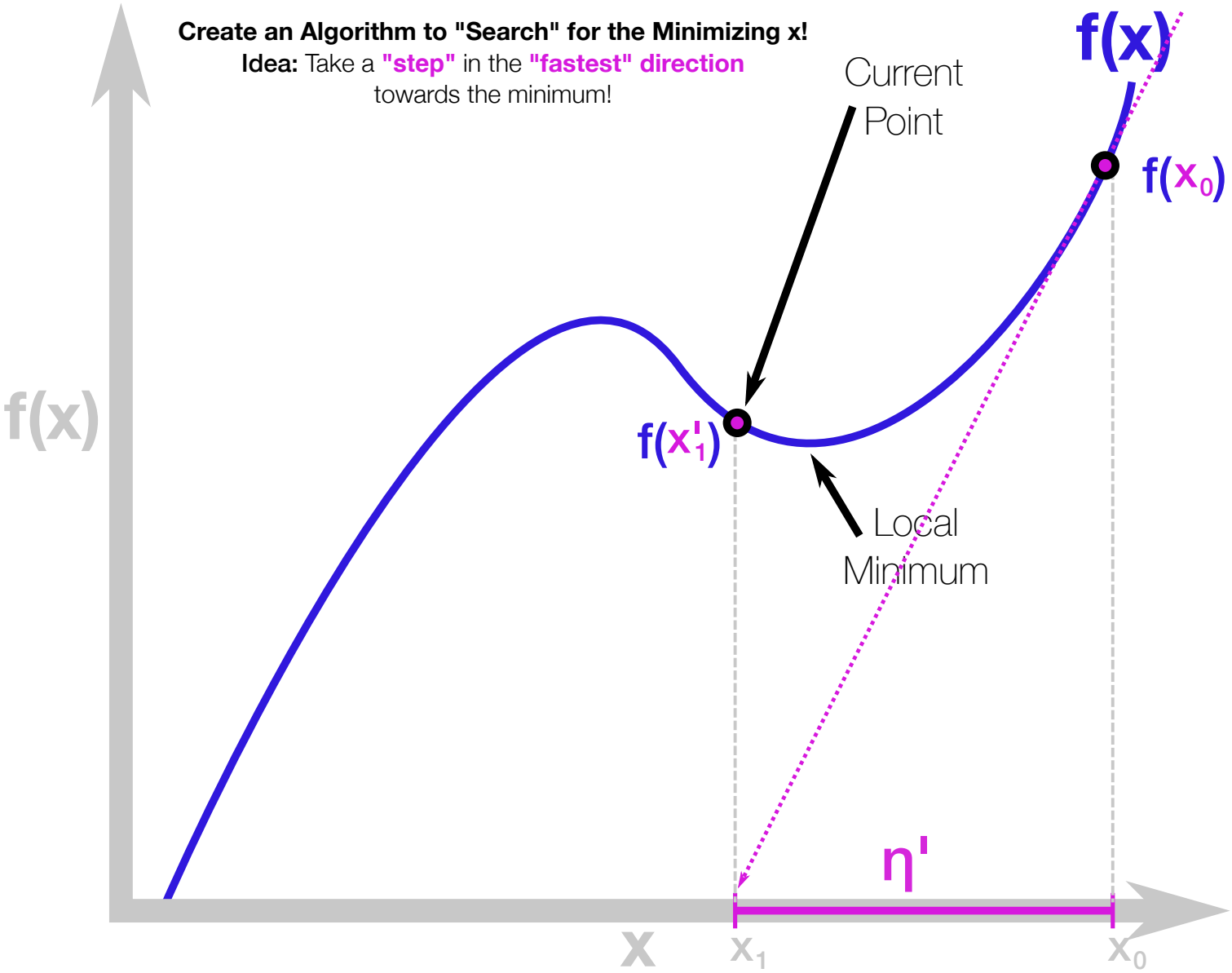

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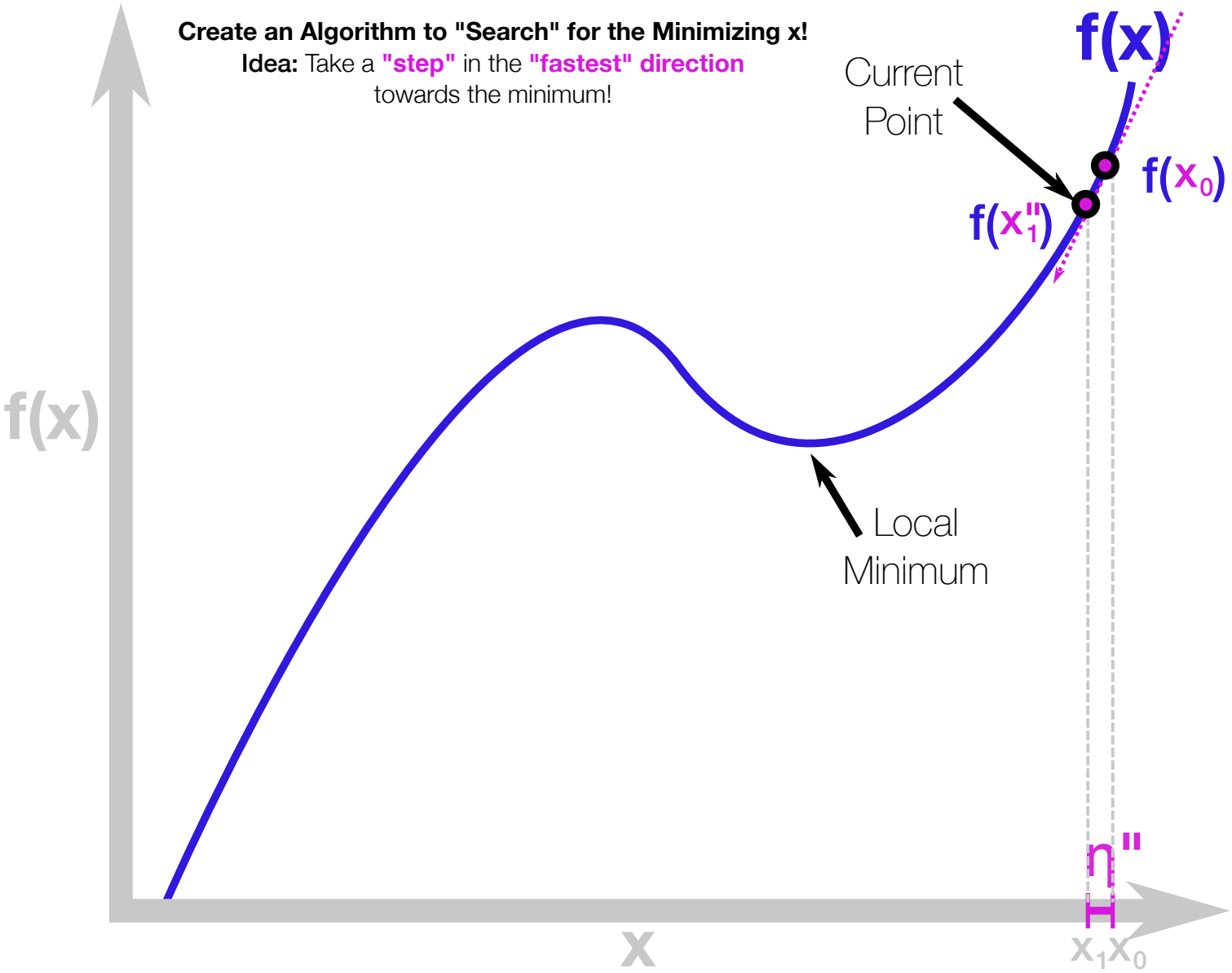

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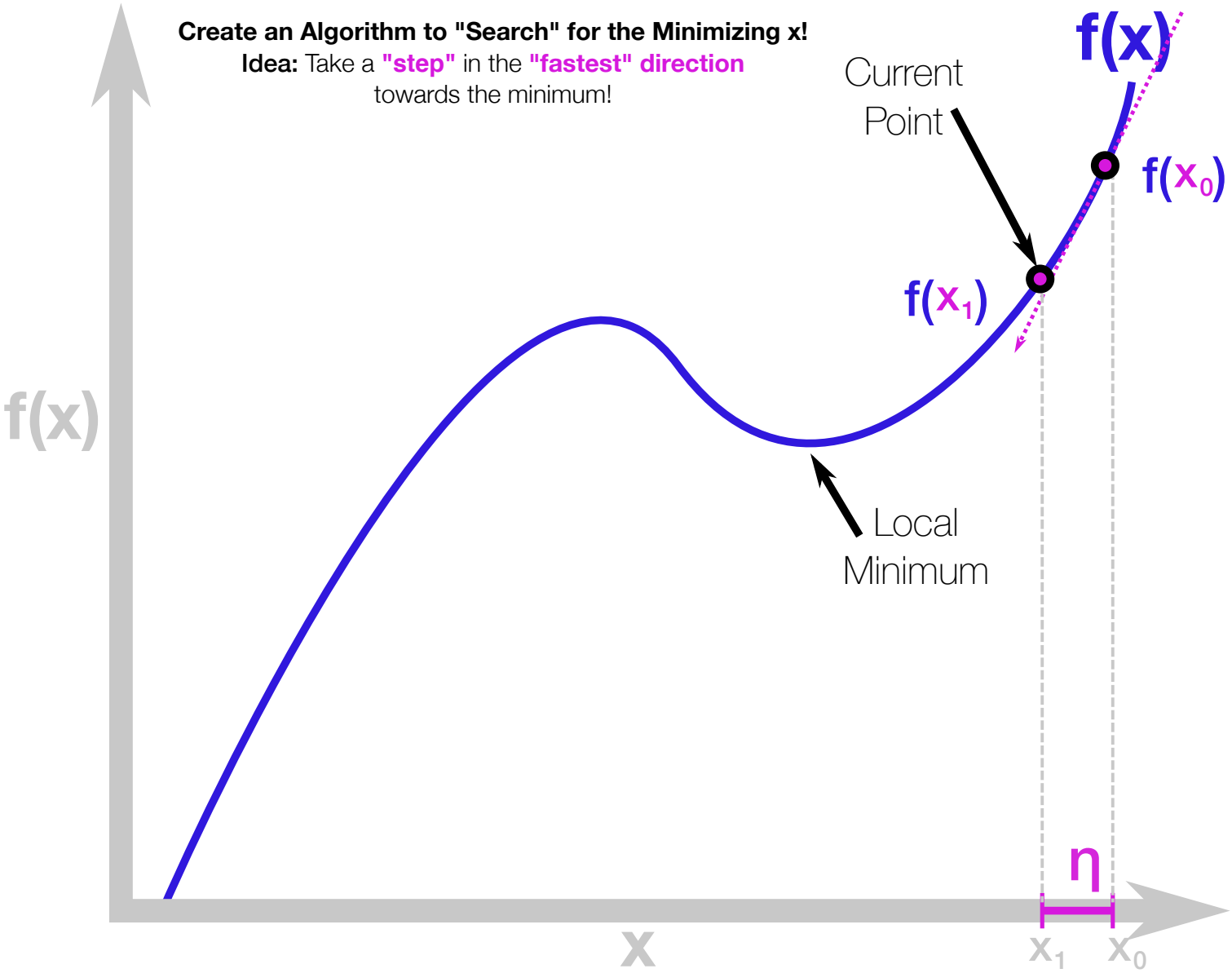

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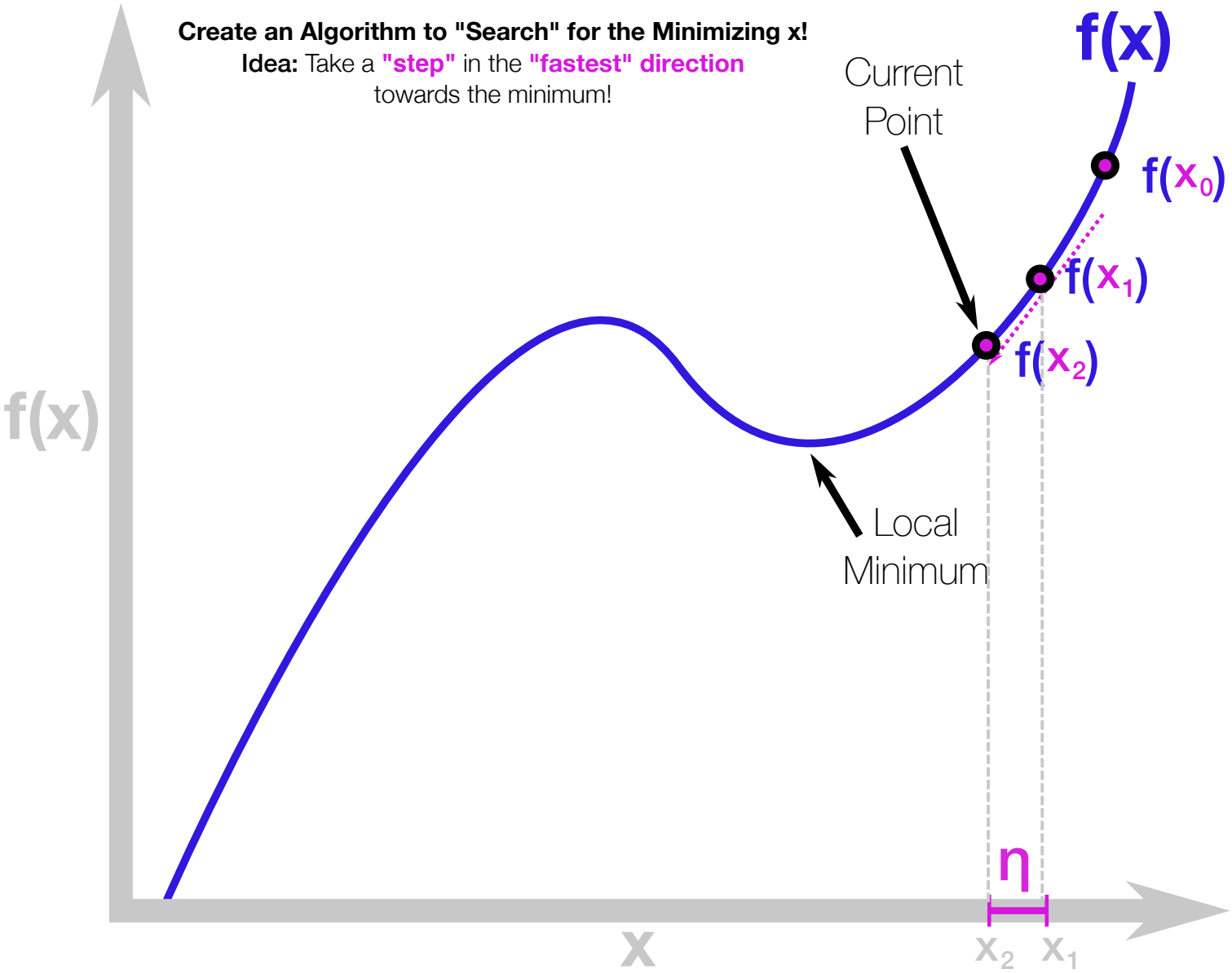

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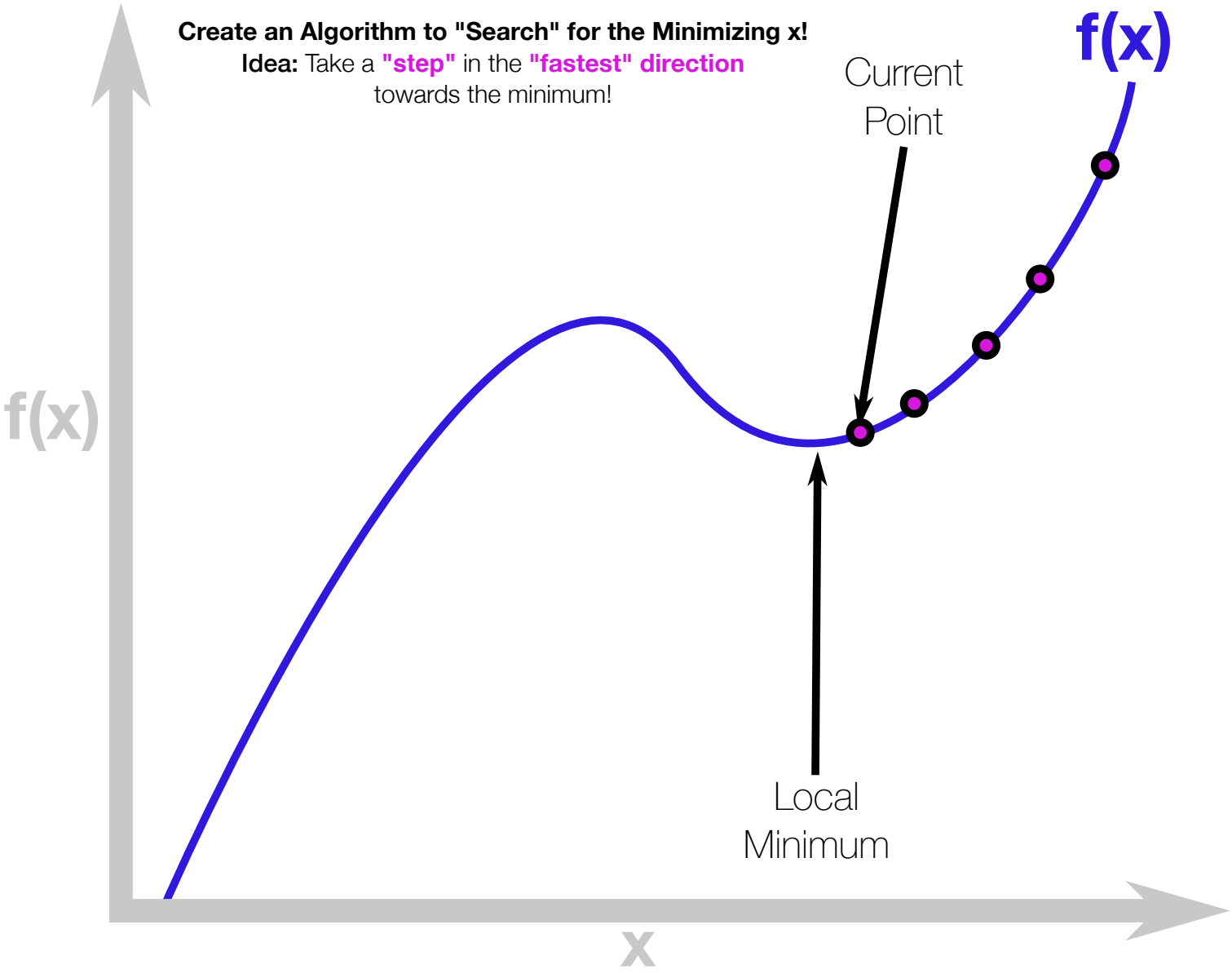

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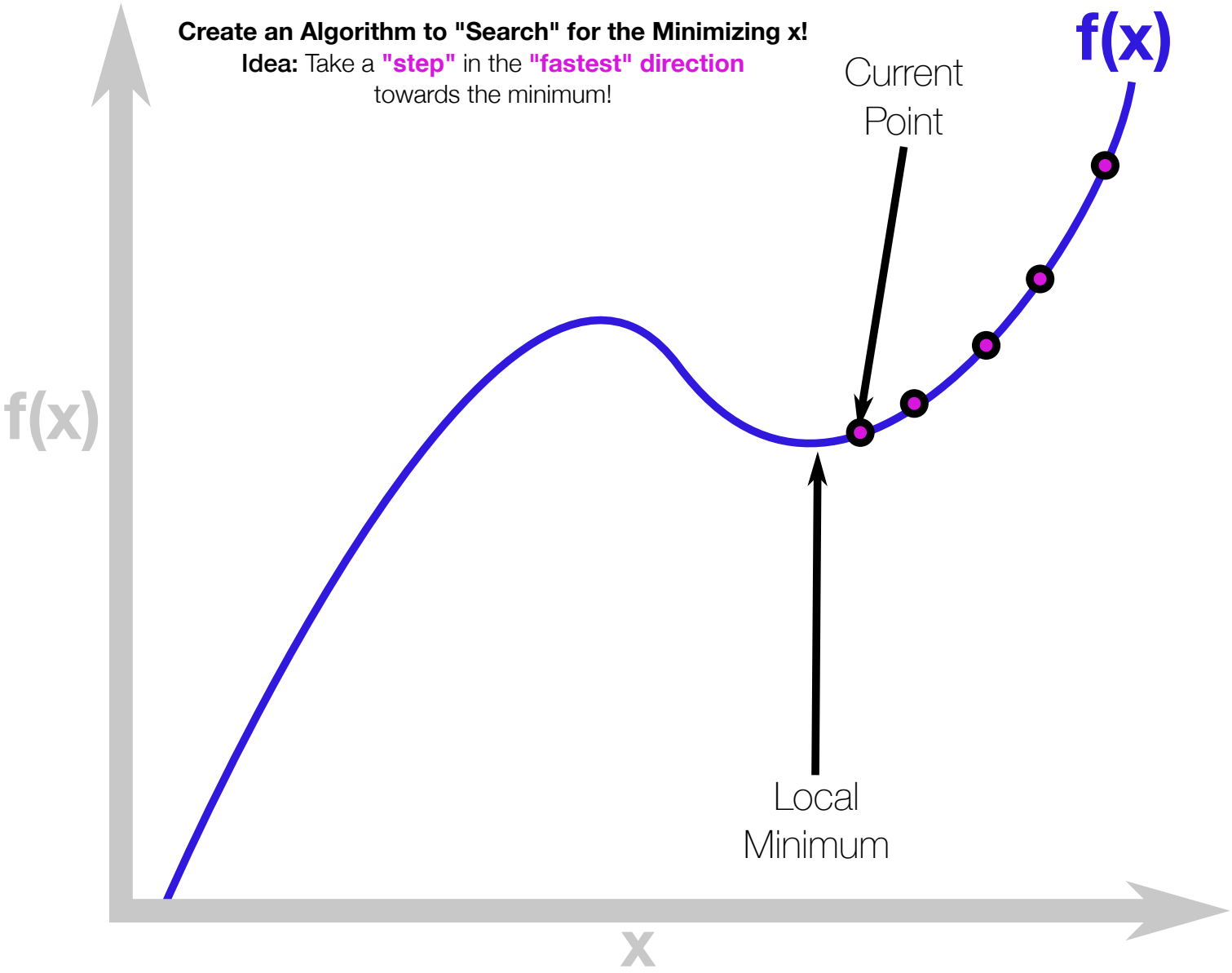

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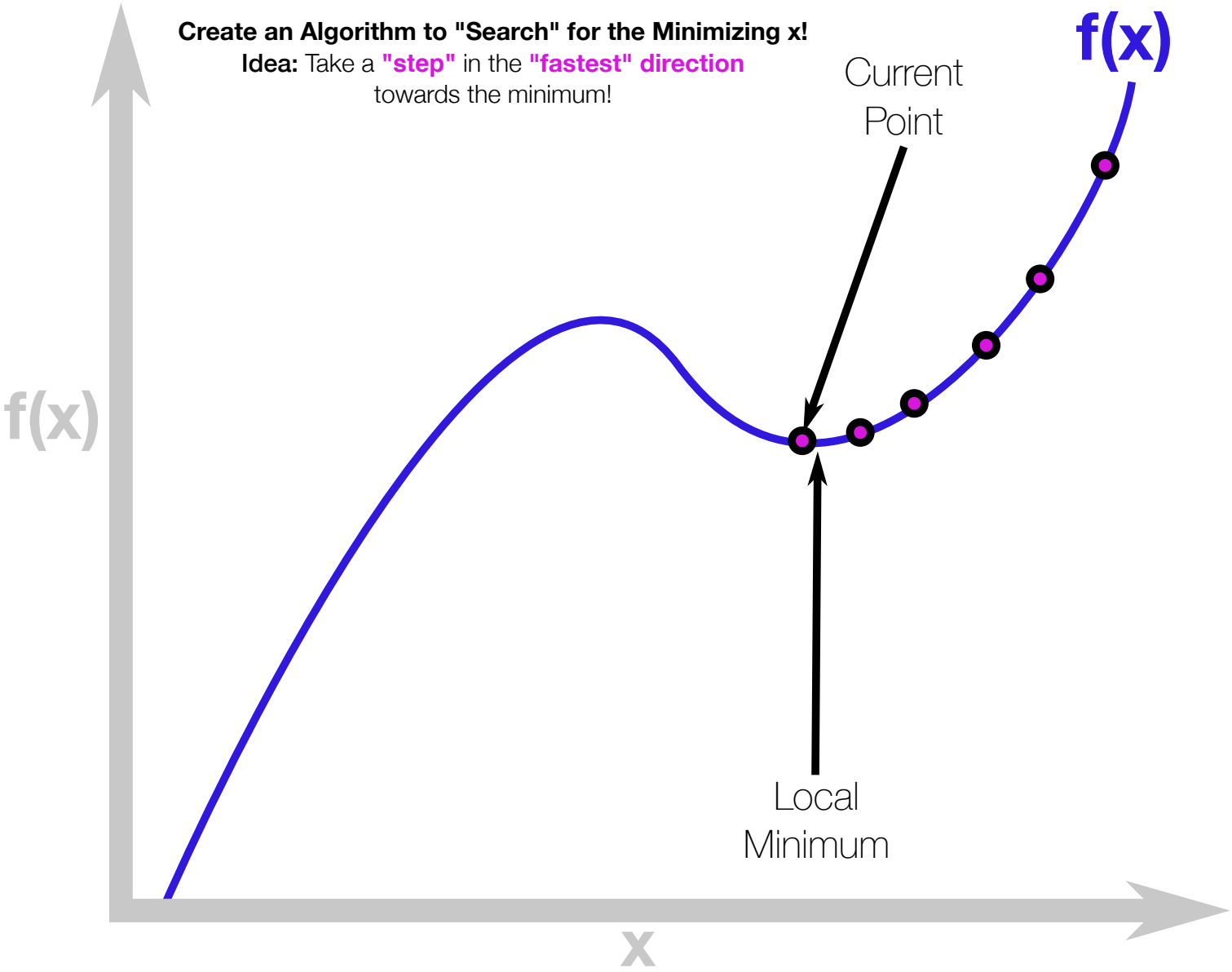

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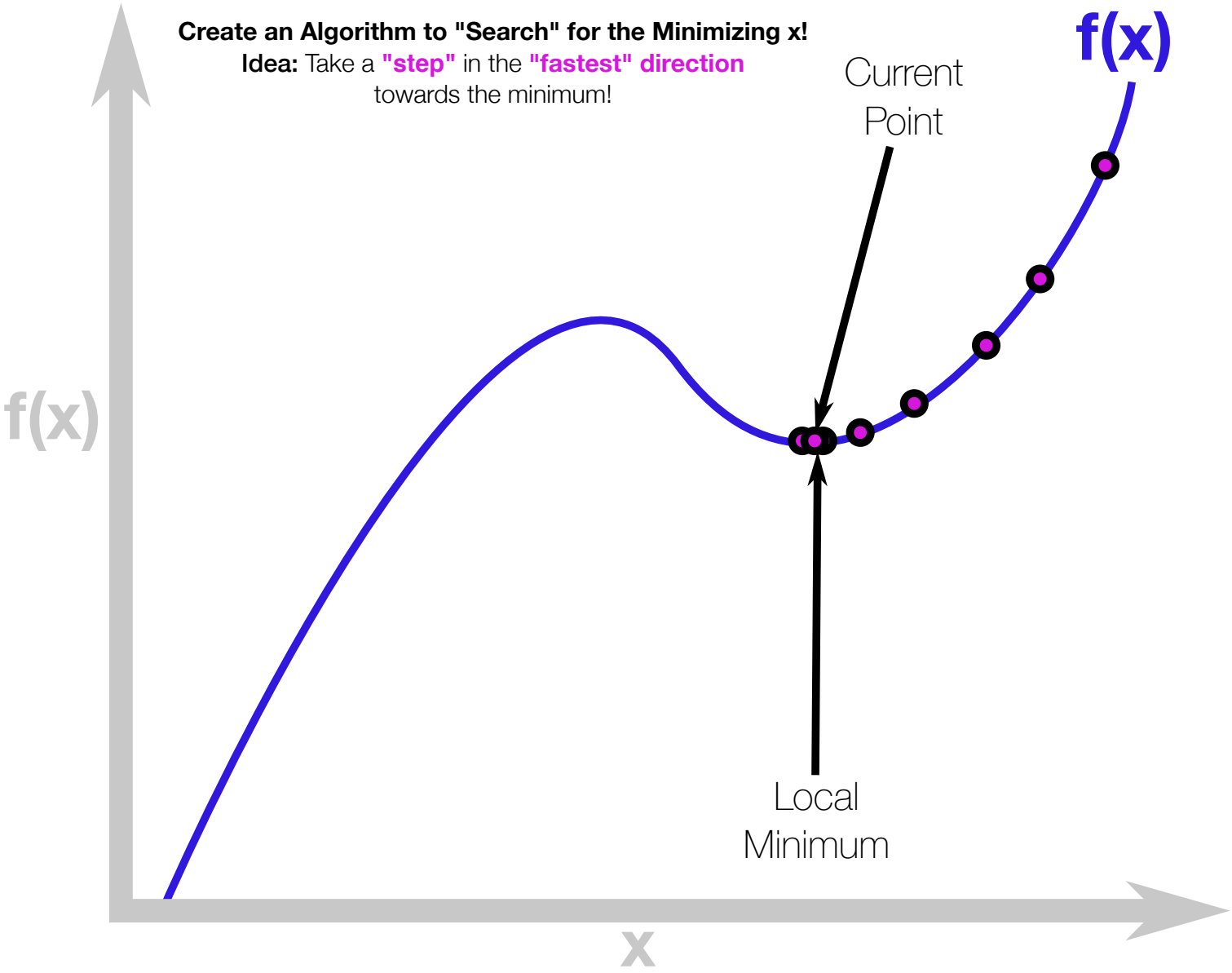

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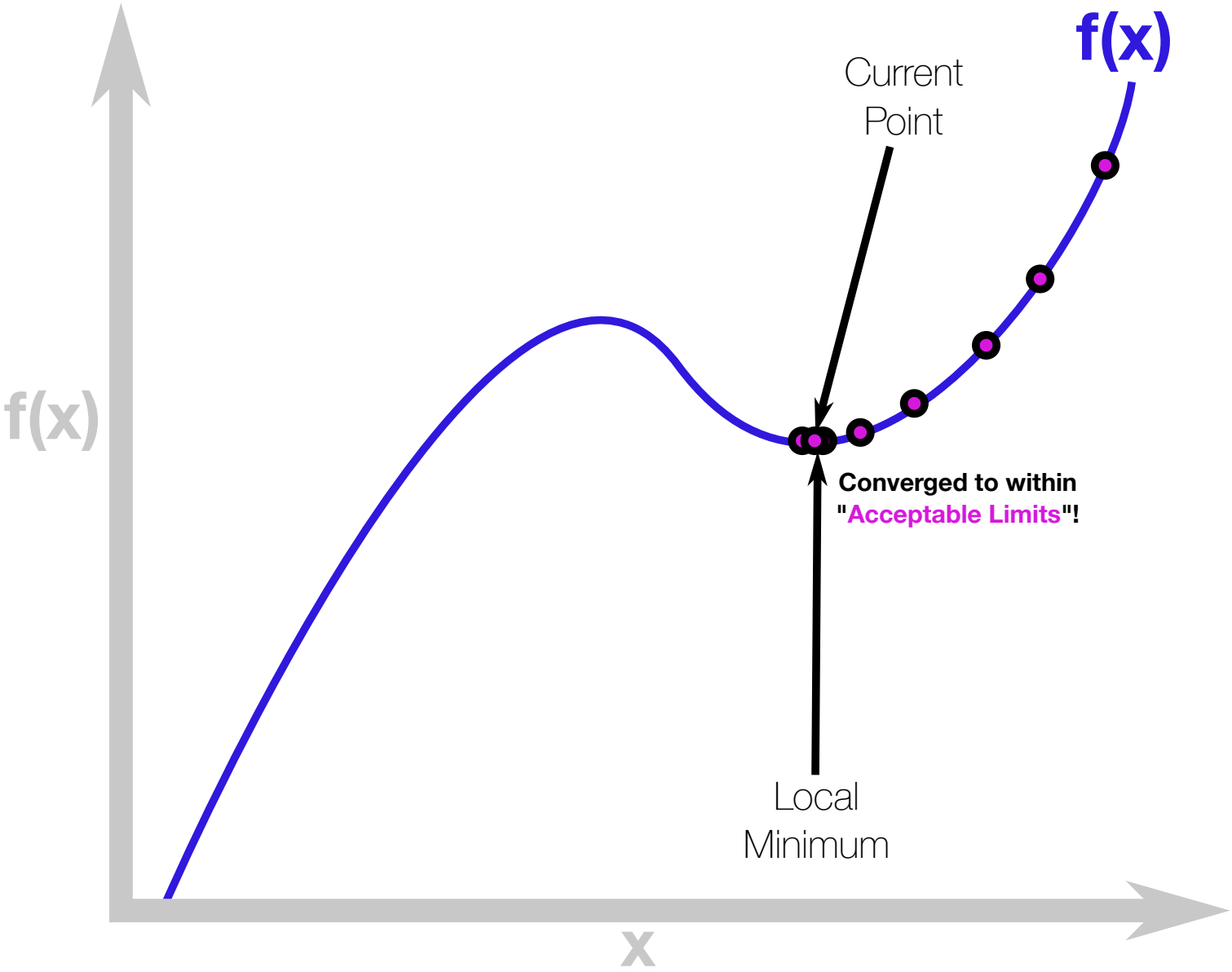

Comparing "Classical" ML Algorithms

In this tutorial, we will implement the *batch gradient descent* algorithm and *stochastic gradient descent* .

Key Takeaway: gradient descent is broadly used in ML algorithms to "learn"/optimize model parameters!

Into the Notebooks we Go...

We will cover one new notebook and (with enough time) cover a second.

1. Tutorial 4 - Gradient Descent
2. Tutorial 4 - Data Imputation

Tutorial 4 - Gradient Descent

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