Congratulations! You passed!

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Go to next item

1. Given the following contour plot, **1 / 1 point**

Which starting points (from 1 to 5) are likely to converge to the global minimum (shown by the mobile phone) when using a steepest descent algorithm?

- [x] Starting point 1

  Correct
  In this case, the algorithm descends smoothly down the slope.

- [ ] Starting point 2
- [x] Starting point 3

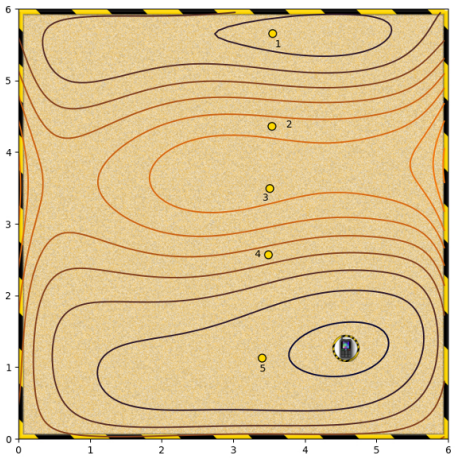
  Correct
  In this case, the algorithm descends smoothly down the slope.

- [x] Starting point 4

  Correct
  In this case, the algorithm descends smoothly down the slope.

- [ ] Starting point 5
- [ ] None of the above

2. Again, which starting points converge to the global minimum? **1 / 1 point**



- [ ] Starting point 1
- [ ] Starting point 2
- [x] Starting point 3

  Correct
  This should converge to the global minimum.

- [x] Starting point 4

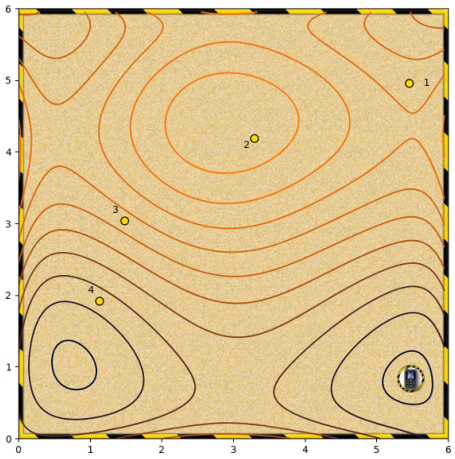
  Correct
  This should converge to the global minimum.

- [x] Starting point 5

Correct
This should converge to the global minimum.

- [ ] None of the above

3. Which starting points converge to the global minimum? **1 / 1 point**

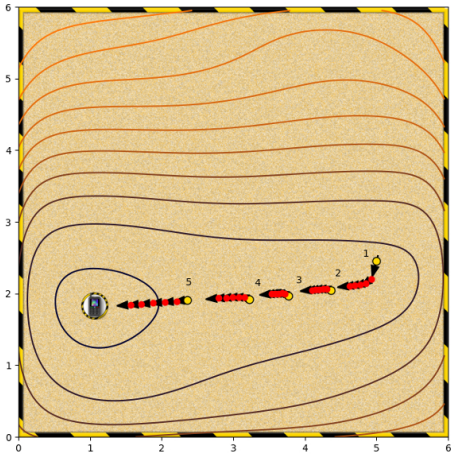


- [ ] Starting point 1
- [x] Starting point 2

Correct
From here, the algorithm will descend the hill to the global minimum.

- [ ] Starting point 3
- [ ] Starting point 4
- [ ] None of the above

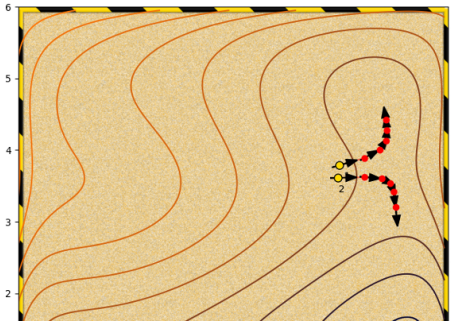
4. What's happening in this gradient descent? **1 / 1 point**

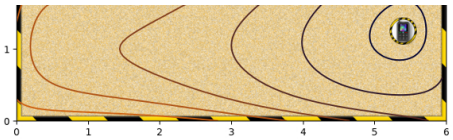


- ( ) None of the other options.
- ( ) The algorithm is getting stuck near saddle points.
- (•) The global minimum is in a wide and flat basin, so convergence is slow.
- ( ) The algorithm is getting stuck near local minima.

Correct
This could be improved by increasing the aggression.

5. What is happening here? **1 / 1 point**

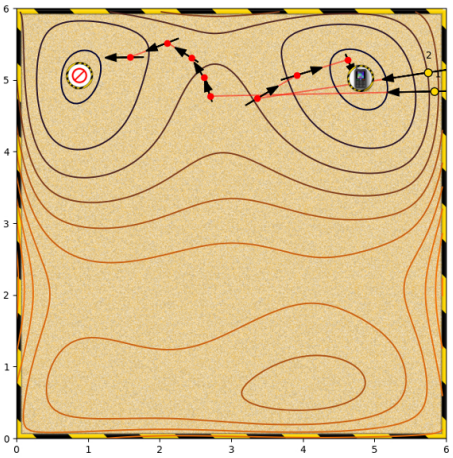




- ○ The algorithm is passing either side of a local maximum.
- ○ There is noise in the system.
- ◉ The algorithm is passing either side of a saddle point.
- ○ The algorithm is passing either side of a local minimum.
- ○ None of the other options.

Correct

6. What is happening here? **1 / 1 point**



- ○ There is noise in the system
- ○ The marked points are saddle points.
- ○ None of the other options.
- ◉ The Jacobian at the starting point is very large.

Correct
This is causing the algorithm to overshoot. In one case into a different basin.