Congratulations! You passed!

Grade received 100%
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To pass 80% or higher

Go to next item

1. Given the following contour plot,

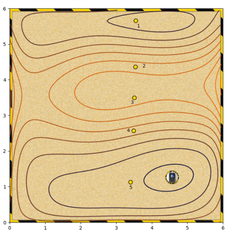
1 / 1 point

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?

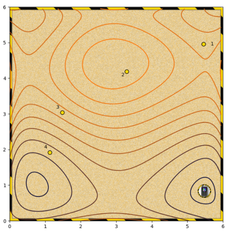
1 / 1 point



- [ ] 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?

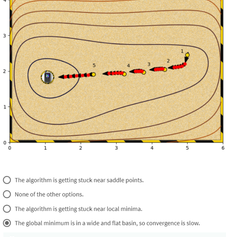
1 / 1 point



- [ ] 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?

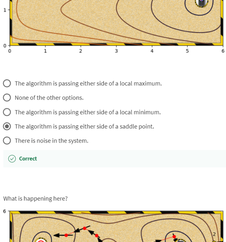
1 / 1 point



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

6. What is happening here?

1 / 1 point

- (•) The Jacobian at the starting point is very large.
- ( ) There is noise in the system
- ( ) The marked points are saddle points.
- ( ) None of the other options.
  - Correct
    This is causing the algorithm to overshoot. In one case into a different basin.