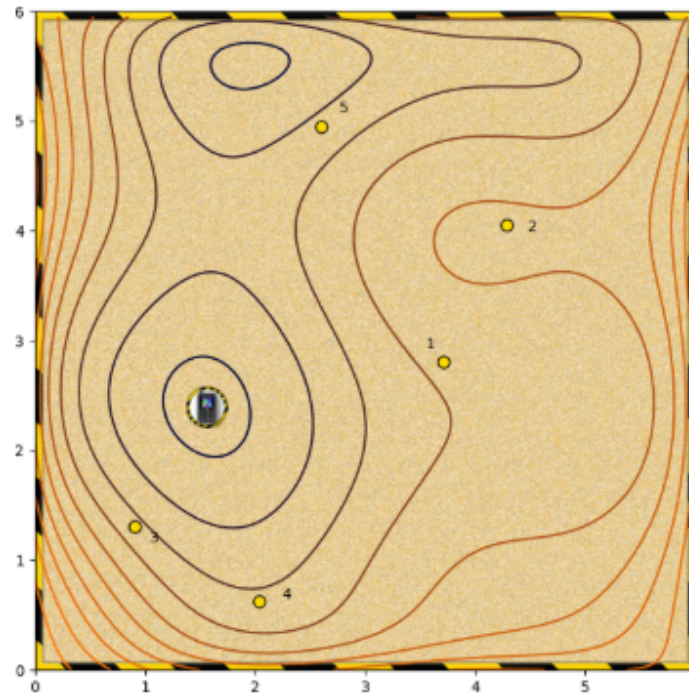


1. Given the following contour plot,

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?

☒ Starting point 1

✓ Correct

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

☐ Starting point 2

☒ Starting point 3

✓ Correct

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

☒ Starting point 4

✓ Correct

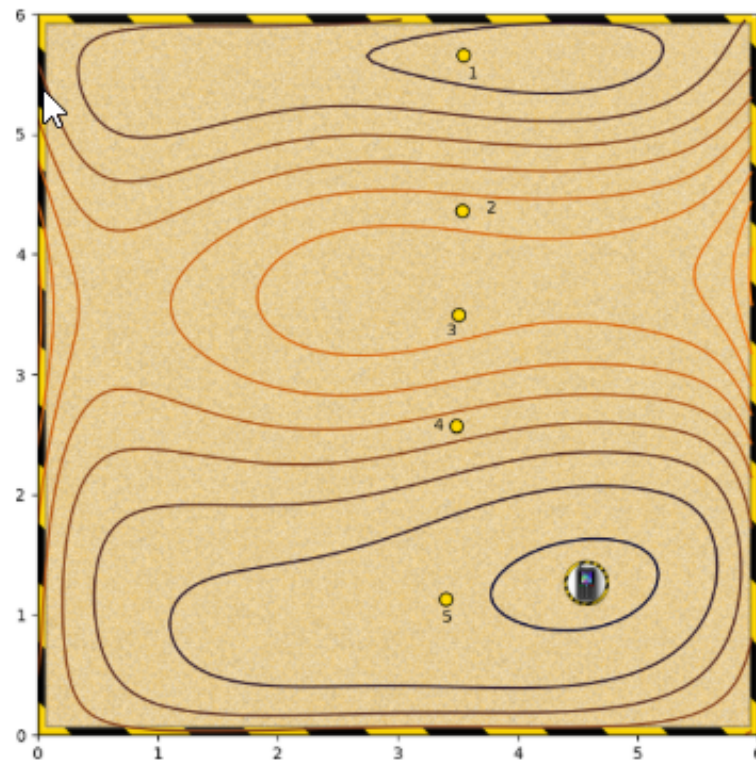
In this case, the algorithm descends smoothly down the slope.

☐ 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

☒ Starting point 3



Correct

This should converge to the global minimum.

☒ Starting point 4



Correct

This should converge to the global minimum.

☒ Starting point 5



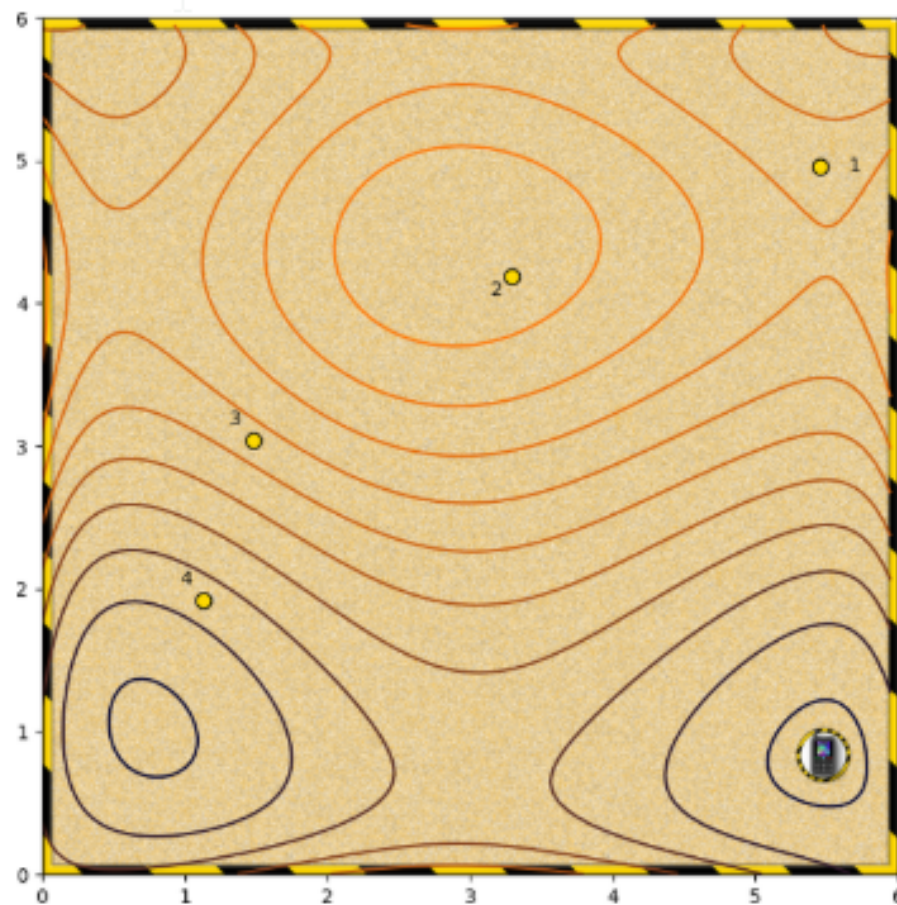
Correct

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

☒ Starting point 2

✔ Correct

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

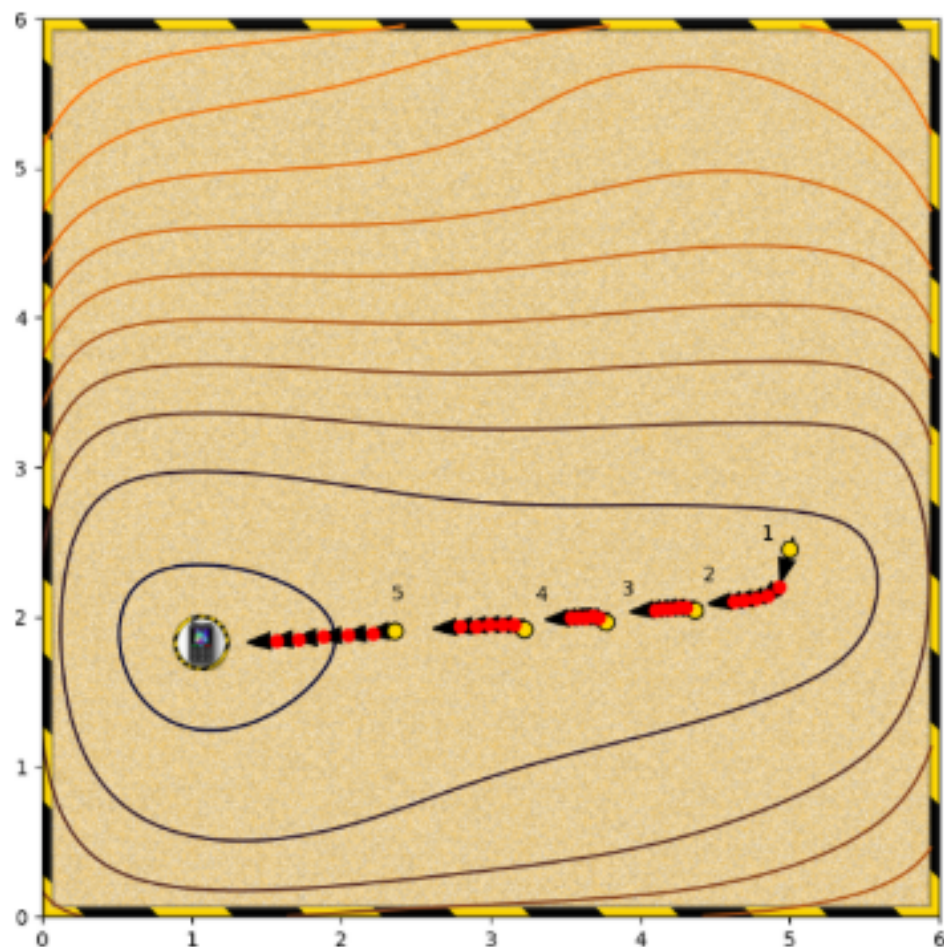
☐ Starting point 3

☐ Starting point 4

☐ None of the above

4. What's happening in this gradient descent?

1 / 1 point



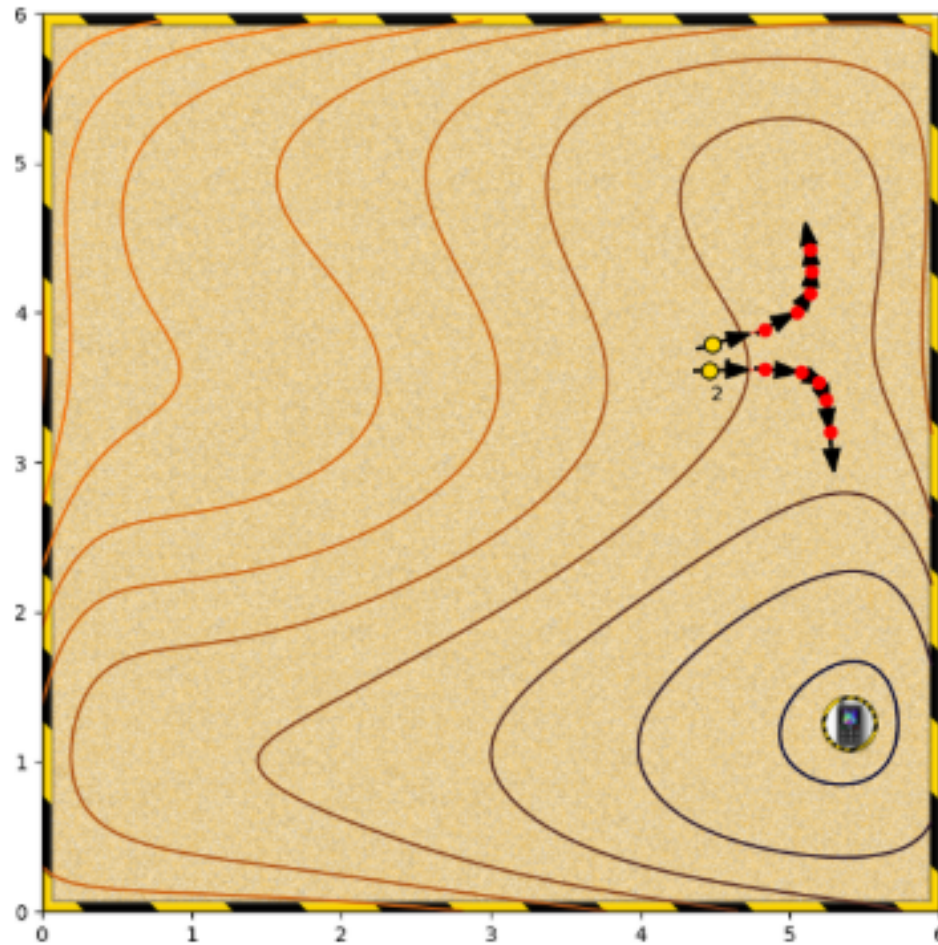
- ☐ None of the other options.
- ☐ The algorithm is getting stuck near local minima.
- ☒ The global minimum is in a wide and flat basin, so convergence is slow.
- ☐ The algorithm is getting stuck near saddle points.

✓ Correct

This could be improved by increasing the aggression.

5. What is happening here?

1 / 1 point

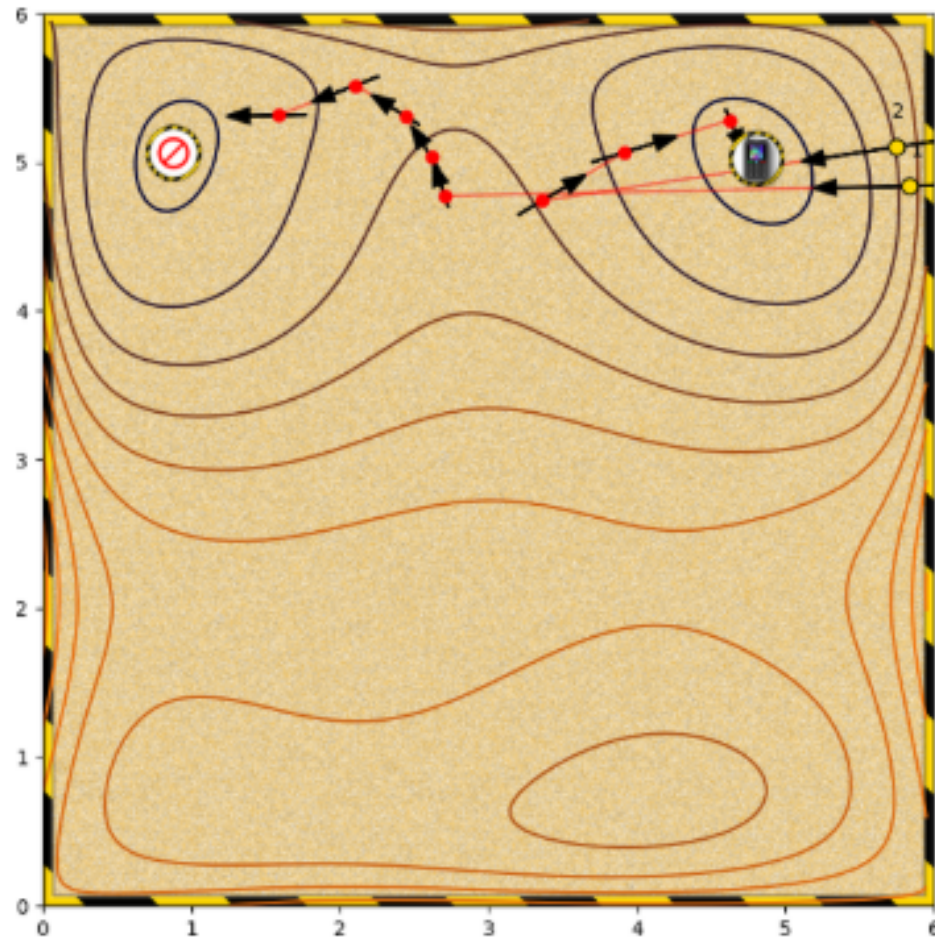


- ☐ There is noise in the system.
- ☐ None of the other options.
- ☐ The algorithm is passing either side of a local maximum.
- ☐ The algorithm is passing either side of a local minimum.
- ☒ The algorithm is passing either side of a saddle point.

✓ Correct

6. What is happening here?

1 / 1 point



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

✓ Correct

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