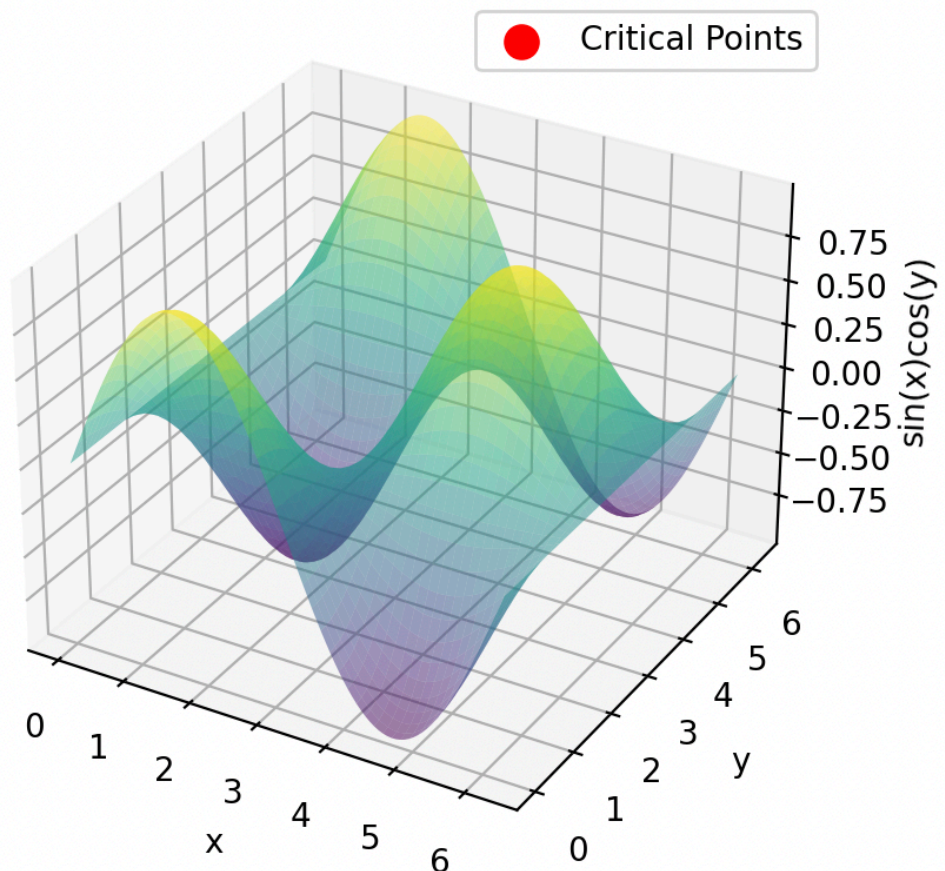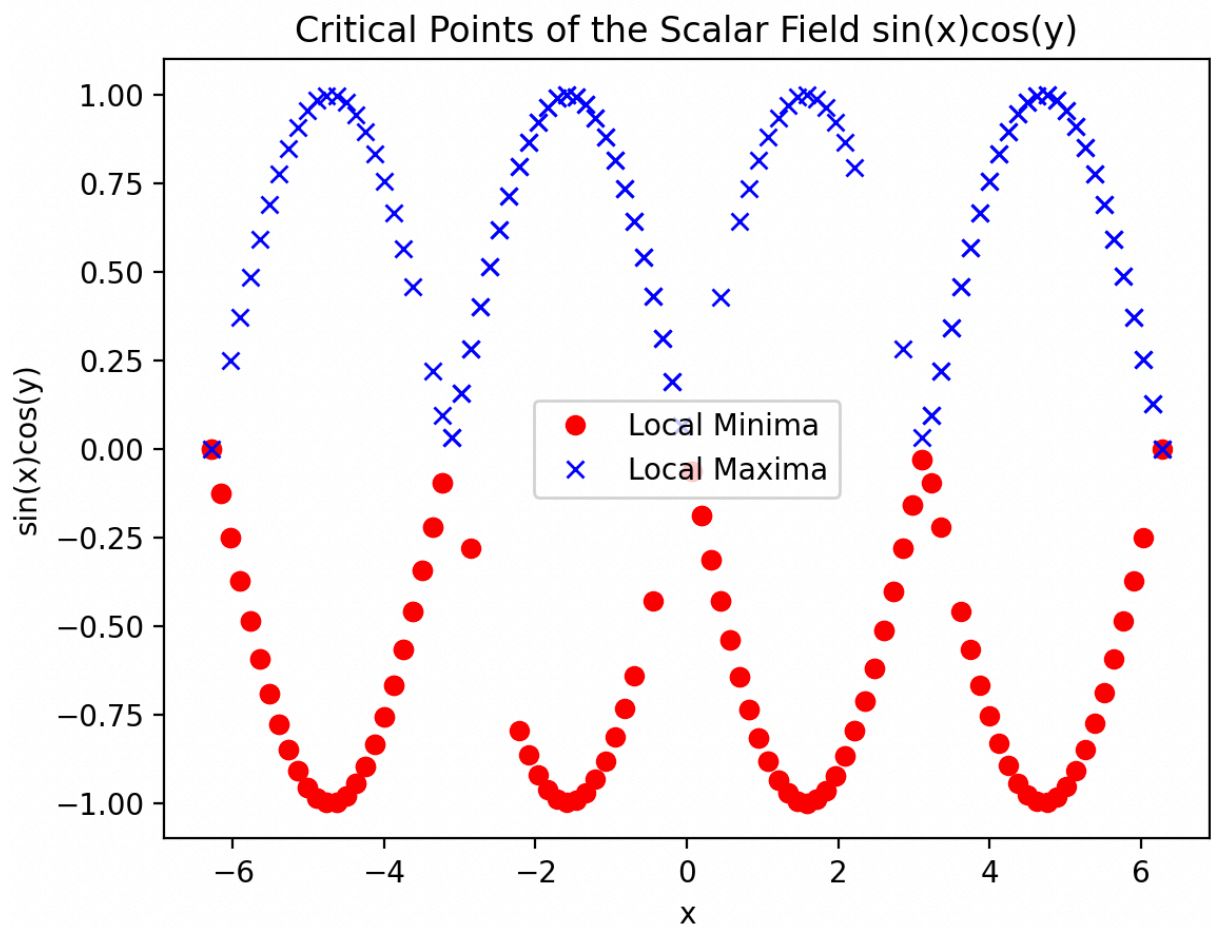OUTPUT

```
(base) shreyangupta@Shreyans-MacBook-Air topop % python3 -u "/Users/shreyangupta/Desktop/topop/topo2dg.py"
Gradient: [array([[ 0.00000000e+00, -1.27692870e-04, -2.54871565e-04, ...,
         2.54871565e-04,  1.27692870e-04,  4.93122043e-19],
       [ 0.00000000e+00, -2.55128652e-04, -5.09229992e-04, ...,
         5.09229992e-04,  2.55128652e-04,  9.85251272e-19],
       [ 0.00000000e+00, -5.09229992e-04, -1.01640949e-03, ...,
         1.01640949e-03,  5.09229992e-04,  1.96653528e-18],

       ...,
       [ 0.00000000e+00,  5.09229992e-04,  1.01640949e-03, ...,
        -1.01640949e-03, -5.09229992e-04, -1.96653528e-18],
       [ 0.00000000e+00,  2.55128652e-04,  5.09229992e-04, ...,
        -5.09229992e-04, -2.55128652e-04, -9.85251272e-19],
       [ 0.00000000e+00,  1.27692870e-04,  2.54871565e-04, ...,
        -2.54871565e-04, -1.27692870e-04, -4.93122043e-19]]), array([[0.06342392, 0.06329623, 0.06291366, ..., 0.06291366, 0.0632962
3,
        0.06342392],
       [0.06329623, 0.06316879, 0.062787  , ..., 0.062787  , 0.06316879,
        0.06329623],
       [0.06291366, 0.062787  , 0.06240751, ..., 0.06240751, 0.062787  ,
        0.06291366],

       ...,
       [0.06291366, 0.062787  , 0.06240751, ..., 0.06240751, 0.062787  ,
        0.06291366],
       [0.06329623, 0.06316879, 0.062787  , ..., 0.062787  , 0.06316879,
        0.06329623],
       [0.06342392, 0.06329623, 0.06291366, ..., 0.06291366, 0.06329623,
        0.06342392]])]
```
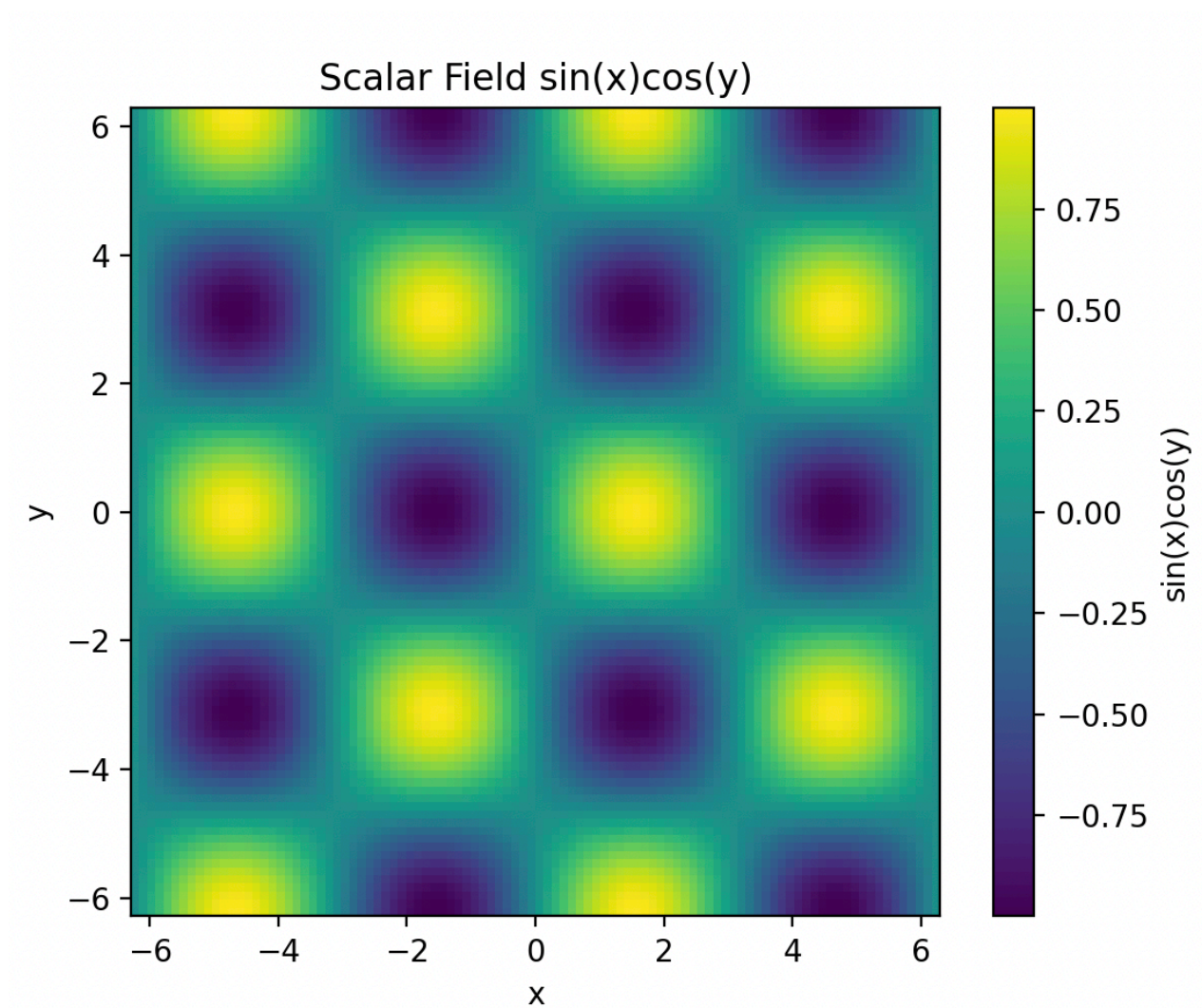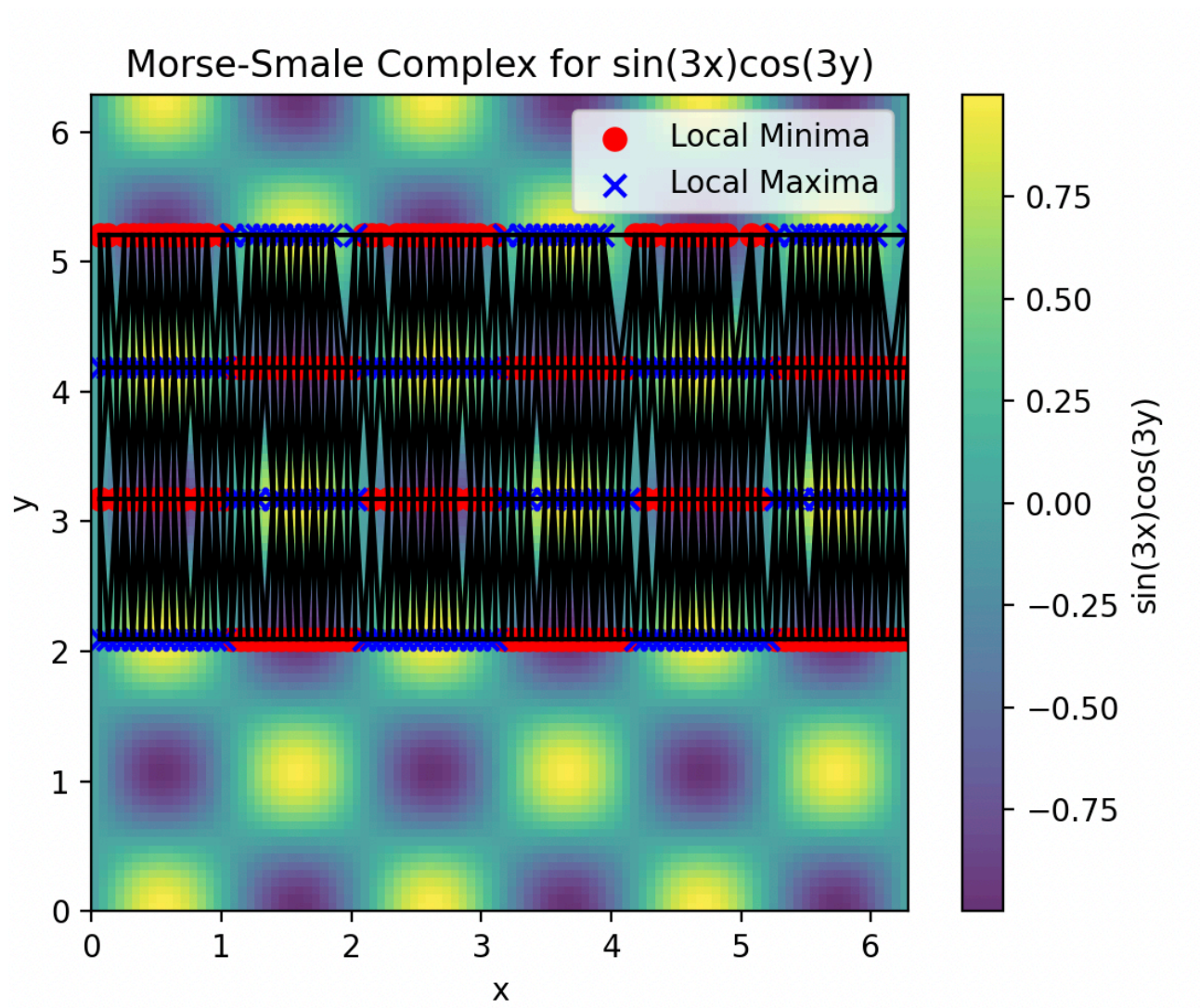
1)topo2dg.py-2 gradient arrays shall be visible

2)topo3d.py- this output should be visible depicting the critical points in 3d scalar field of sinx cosy

Critical Points of the Scalar Field sin(x)cos(y)

3)topoad1.py-visualise the critical points in 2d plot.

Scalar Field sin(x)cos(y)

4)topompl.py- it creates a heatmap representation of the scalar field function sin(x)cos(y) on a 2D plot

Morse-Smale Complex for sin(3x)cos(3y)

6)topoms2d1.py-this output shows that quadrilaterals are formed between the critical points.