

```
1: import numpy as np
2: import pandas as pd
3: import week6
4: import matplotlib.pyplot as plt
5: from mpl_toolkits.mplot3d import Axes3D
6: from matplotlib.colors import LogNorm
7:
8: # Global variables for extents
9: x_min, x_max = -5, 5
10: y_min, y_max = -5, 5
11:
12: def plot_wireframe_and_contour(f, T, resolution=100):
13:     global x_min, x_max, y_min, y_max
14:
15:     # Generate data for wireframe plot
16:     x_range = np.linspace(x_min, x_max, resolution)
17:     y_range = np.linspace(y_min, y_max, resolution)
18:     X, Y = np.meshgrid(x_range, y_range)
19:     Z = np.zeros_like(X)
20:     for i in range(resolution):
21:         for j in range(resolution):
22:             Z[i, j] = f([X[i, j], Y[i, j]], T)
23:
24:     # Plot wireframe
25:     fig = plt.figure(figsize=(12, 6))
26:
27:     ax_wireframe = fig.add_subplot(121, projection='3d')
28:     ax_wireframe.plot_wireframe(X, Y, Z, color='blue')
29:     ax_wireframe.set_xlabel('X')
30:     ax_wireframe.set_ylabel('Y')
31:     ax_wireframe.set_zlabel('f(x, T)')
32:     ax_wireframe.set_title('Wireframe Plot of f(x, T)')
33:
34:     # Generate data for contour plot
35:     Z_contour = np.zeros_like(X)
36:     for i in range(resolution):
37:         for j in range(resolution):
38:             Z_contour[i, j] = f([X[i, j], Y[i, j]], T)
39:
40:     # Plot contour with log scale color
41:     ax_contour = fig.add_subplot(122)
42:     contour = ax_contour.contourf(X, Y, Z_contour, levels=20, norm=LogNorm(), cmap='viridis')
43:     plt.colorbar(contour, ax=ax_contour, label='f(x, T)')
44:     ax_contour.set_xlabel('X')
45:     ax_contour.set_ylabel('Y')
46:     ax_contour.set_title('Contour Plot of f(x, T)')
47:
48:     plt.tight_layout()
49:     plt.show()
50:
51: if __name__ == "__main__":
52:     df = pd.read_csv("data/T.csv")
53:     T = df.values
54:     plot_wireframe_and_contour(week6.f, T) # Call the function to plot wireframe and contour
55:
```