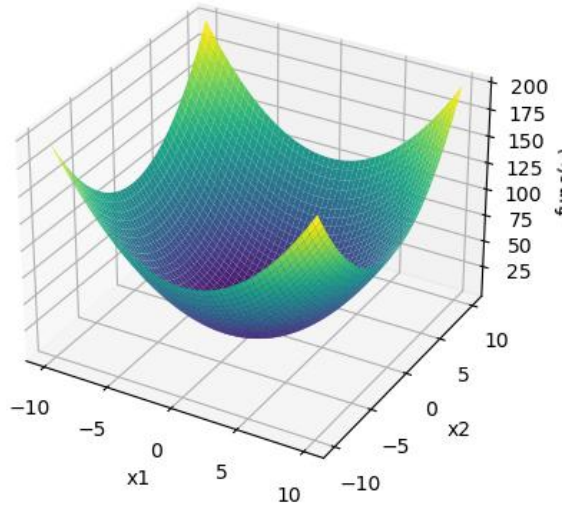
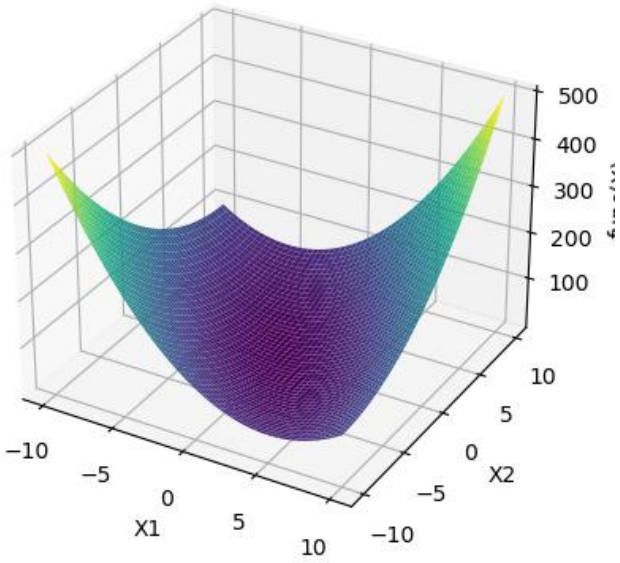
The original output of the functions

All selected functions have been defined in Python, and the desired plots areprovided as output.

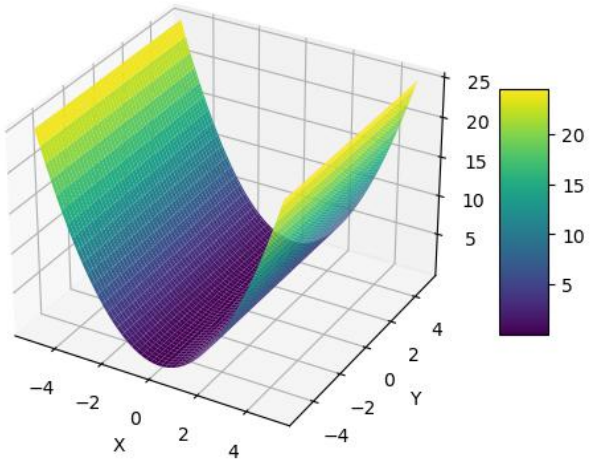


$$f(X) = \sum_{i=1}^{n} x_i^2$$



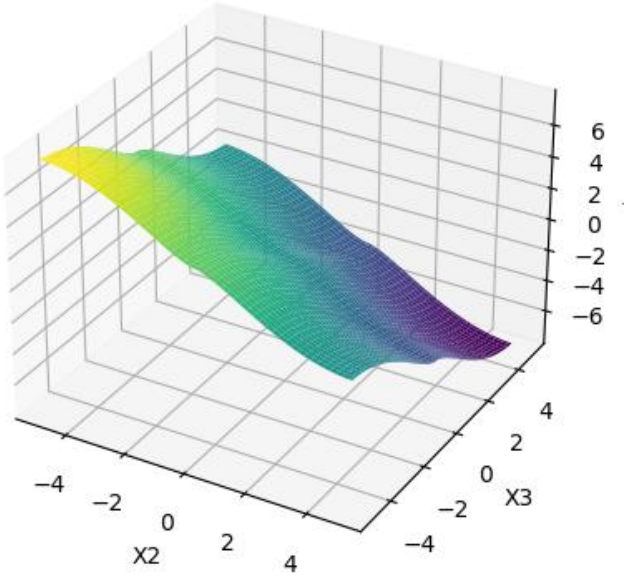
$$f(X) = \sum_{i=1}^{n} \left(\sum_{j=1}^{i} x_j \right)^2$$

3D Plot of the Objective Function



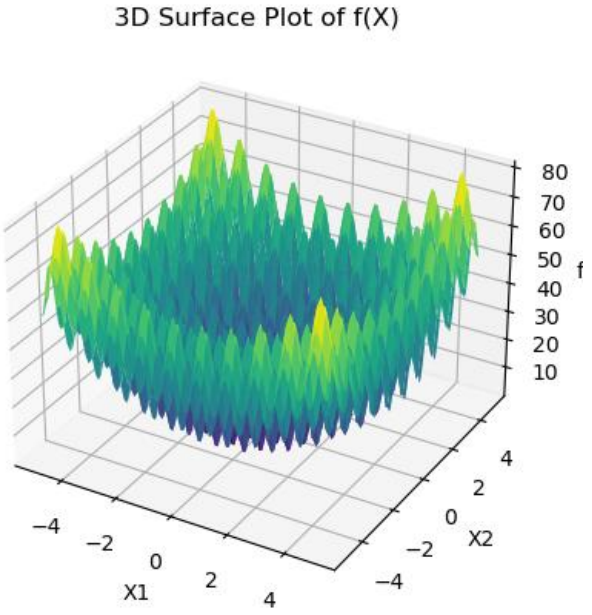
$$f(X) = \sum_{i=1}^{n-1} (100(x_{i+1} - x_i^2)^2 + (x_i - 1)^2)$$

3D Surface Plot of f(X)

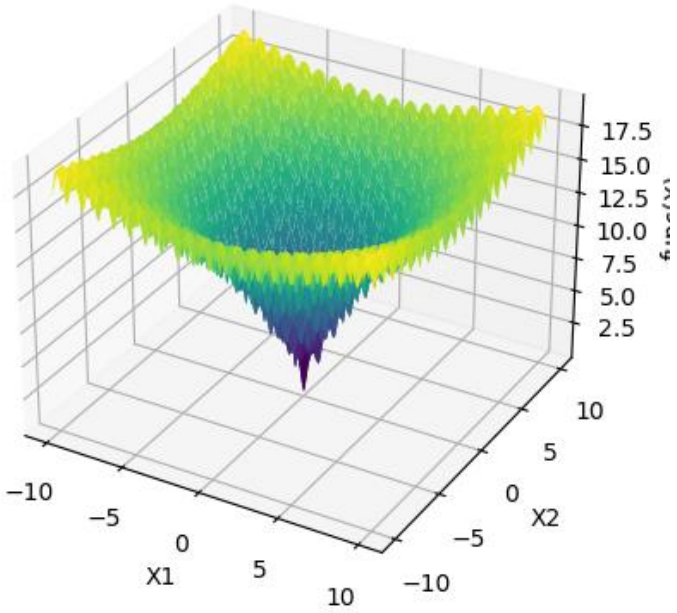


PΛ

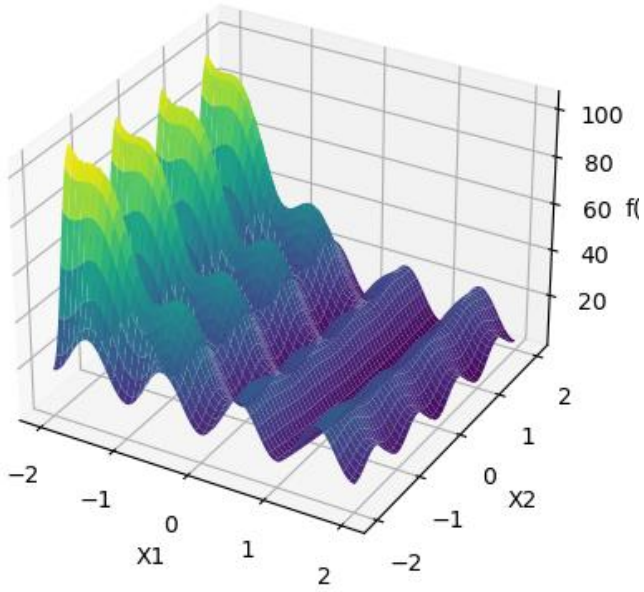
$$f(X) = -\sum_{i=1}^{n} \left(x_i \sin(\sqrt{|x_i|})\right)$$



$$f(X) = \sum_{i=1}^{n} (x_i^2 - 10\cos(2\pi x_i) + 10)$$



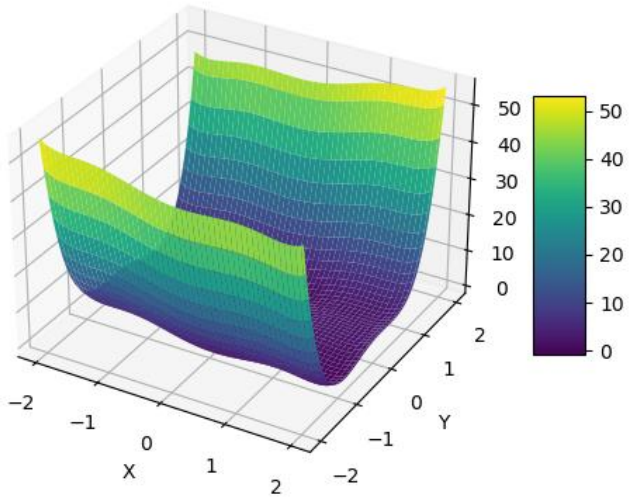
$$f(X) = -20\exp\left(-0.2\sqrt{\frac{1}{n}\sum_{i=1}^{n} x_i^2}\right) - \exp\left(\frac{1}{n}\sum_{i=1}^{n}\cos 2\pi x_i\right) + 20 + e$$



$$f(X)=\frac{1}{4000}\sum_{i=1}^{n}x_i^2-\prod_{i=1}^{n}\cos\left(x_i/\sqrt{i}\right)+1$$

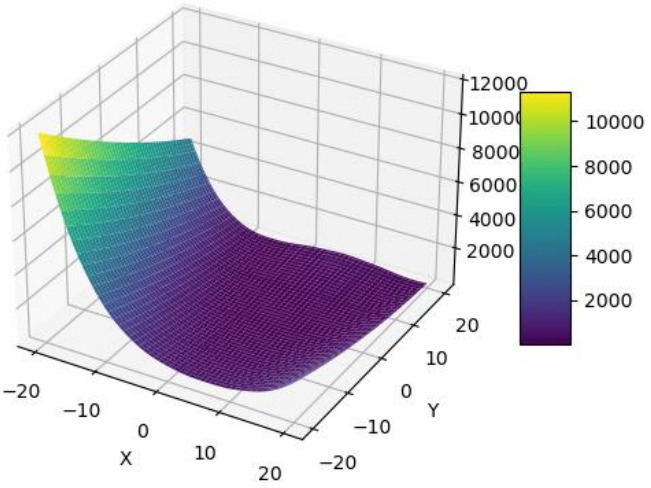
$$f(X)=\frac{\pi}{n}\{10\sin^2(\pi y_1)+\sum_{i=1}^{n-1}(y_i-1)^2[1+10\sin^2(\pi y_{i+1})]$$
$$+(y_n-1)^2\}+\sum_{i=1}^{n}u(x_i,10,100,4)$$

3D Plot of the Objective Function



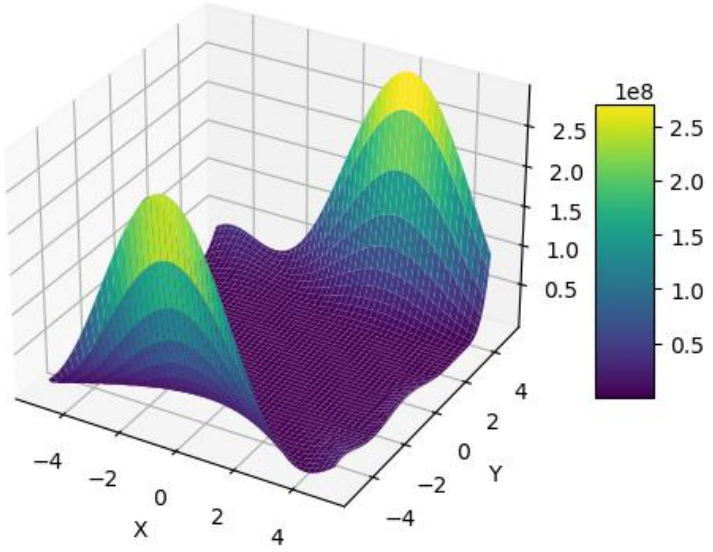
$$f(X)=4x_1^2-2.1x_1^4+\frac{1}{3}x_1^6+x_1x_2-4x_2^2+4x_2^4$$

3D Plot of the Objective Function



$$f(X)=\left(x_2-\frac{5.1}{4\pi^2}x_1^2+\frac{5}{\pi}x_1-6\right)^2+10\left(1-\frac{1}{8\pi}\right)\cos(x_1)+10$$

3D Plot of the Objective Function



$$f(X)=[1+(x_1+x_2+1)^2(19-14x_1+3x_1^2-14x_2+6x_1x_2+3x_2^2)]\times[30+(2x_1-3x_2)^2\times(18-32x_1+12x_1^2+48x_2-36x_1x_2+27x_2^2)]$$