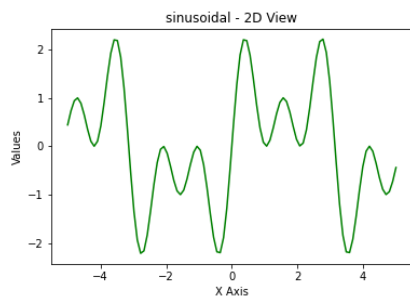| #1 / Alpine n1	
2D graf	3D graf
alpine_n1 - 2D View	alpine_n1 - 3D View
Vzorec $f(\mathbf{x})=\sum i=1n|xi\sin(xi)+0.1xi|$	
Zdroj https://www.infinity77.net/global_optimization/test_functions_nd_A.html	
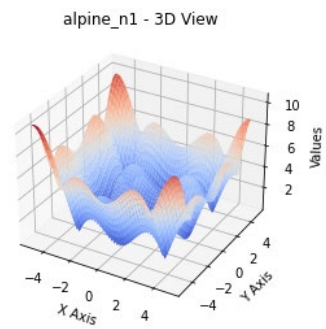
#2 / Sinusoidal	
2D graf	3D graf
sinusoidal - 2D View	sinusoidal - 3D View
Vzorec	
Zdroj	
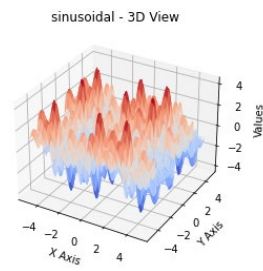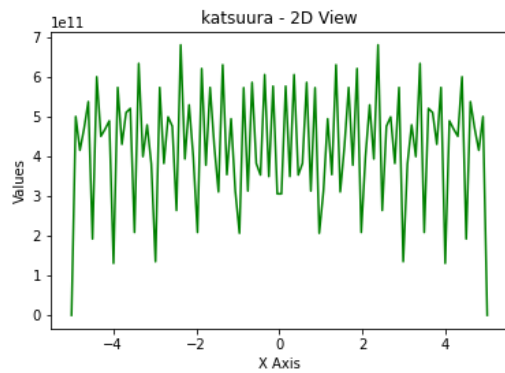
#3 / Katsuura	
2D graf	3D graf
Vzorec $f(\mathbf{x})=(\prod i=1n(1+i\sum j=1322j|2jxi-\mathrm{round}(2jxi)|))n210-(n1\sum i=1nxi)$	
Zdroj https://infinity77.net/global_optimization/test_functions_nd_K.html	
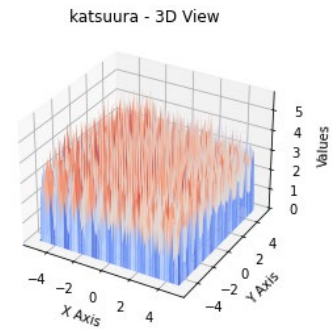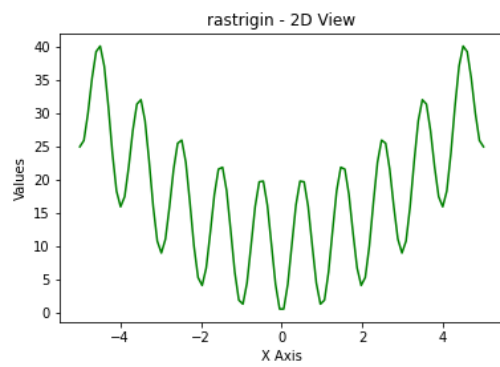
#4 / Rastrigin	
2D graf	3D graf
Vzorec $f(\mathbf{x})=(\prod i=1n(1+i\sum j=1322j|2jxi-\text{round}(2jxi)|))n210-(n1\sum i=1nxi)$	
Zdroj https://infinity77.net/global_optimization/test_functions_nd_K.html	
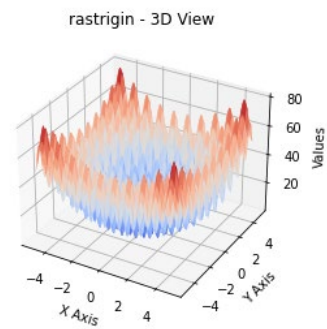
#5 / Langermann	
2D graf	3D graf
langermann - 2D View	langermann - 3D View
Vzorec $$f_{68}(\mathbf{x}) \;=\; -\sum_{i=1}^{m} c_i e^{-\frac{1}{\pi}\sum_{j=1}^{D}(x_j - a_{ij})^2} \cos\left(\pi \sum_{j=1}^{D}(x_j - a_{ij})^2\right)$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	
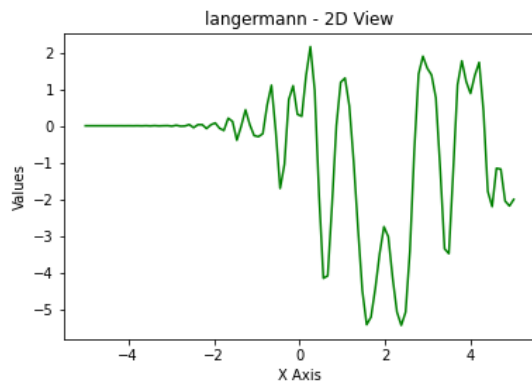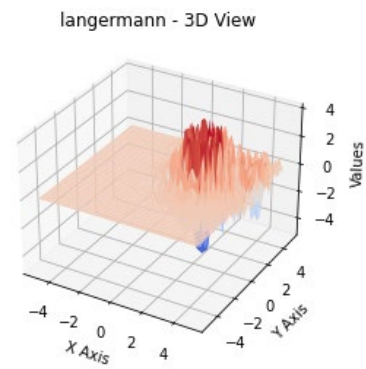
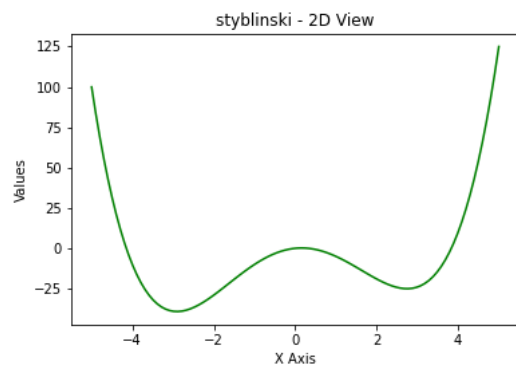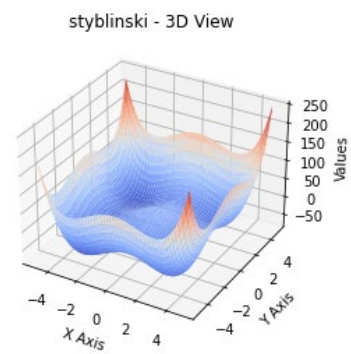| #6 / Styblinski	
2D graf	3D graf
styblinski - 2D View	styblinski - 3D View
$$f_{144}(\mathbf{x}) \quad = \quad \frac{1}{2}\sum_{i=1}^{n}(x_i^4 - 16x_i^2 + 5x_i)$$ Vzorec	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

#7 / Levy	
2D graf	3D graf
levy - 2D View	levy - 3D View
$$\psi(t) := \log \int e^{itx} \mu(dx).$$ Vzorec	
Zdroj https://mathoverflow.net/questions/376513/is-this-statement-of-the-l%C3%A9vy-khintchine-formula-ill-posed	

#8 / Quartic	
2D graf	3D graf
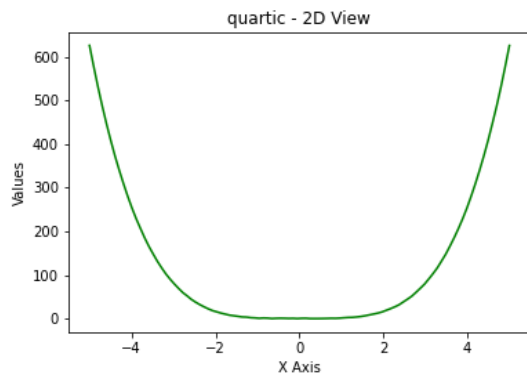
$$f_{100}(\mathbf{x}) = \sum_{i=1}^{D} ix_i^4 + \mathrm{random}[0,1)$$

Vzorec

Zdroj
https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Li
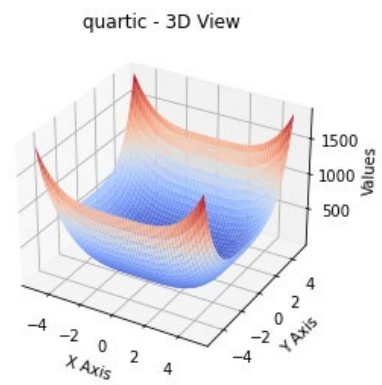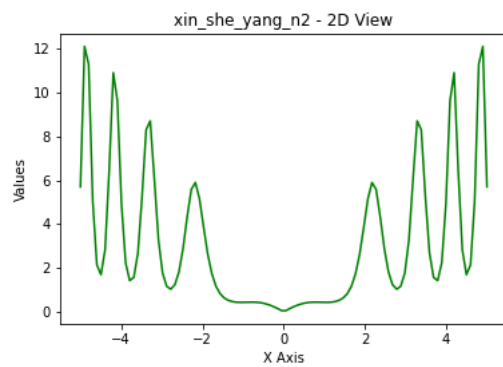terature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Pro
blems.pdf

#9 / Xin She Yang N.2	
2D graf	3D graf

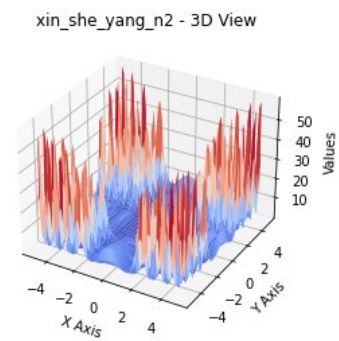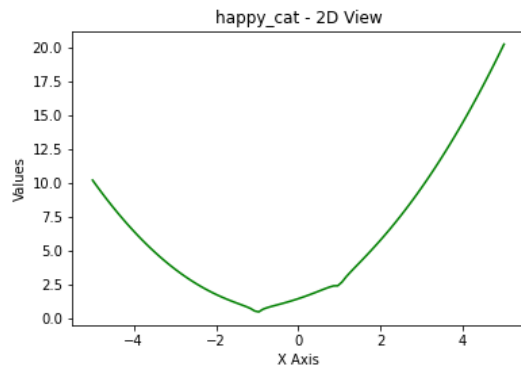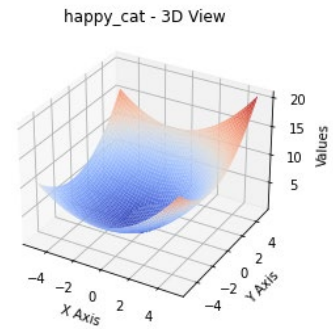| Vzorec	$$f_{170}(\mathbf{x}) = \Big(\sum_{i=1}^{D} |x_i|\Big) \exp\Big[-\sum_{i=1}^{D} \sin(x_i^2)\Big]$$
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

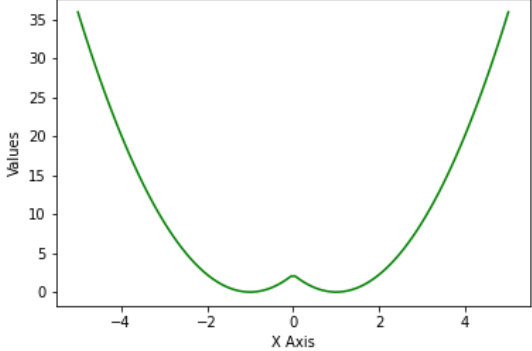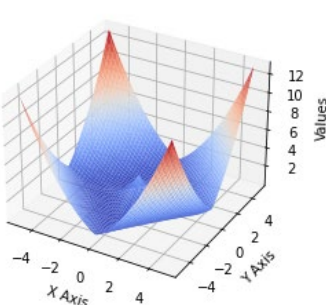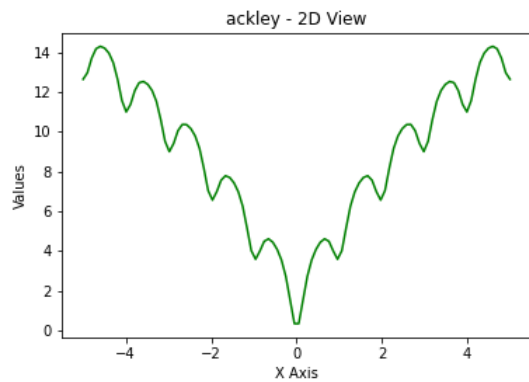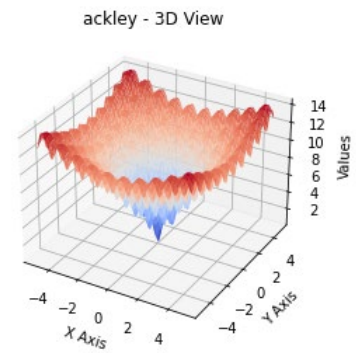| #10 / Happy Cat	
2D graf	3D graf
happy_cat - 2D View	happy_cat - 3D View
Vzorec $f(\boldsymbol{x}) := x_1 + d \left(\sum_{i=2}^{N} x_i^2 \right)^{\alpha}.$	
Zdroj https://www.researchgate.net/publication/234024034_HappyCat_-_A_Simple_Function_Class_Where_Well-Known_Direct_Search_Algorithms_Do_Fail	

#11 / Perm Function	
2D graf	3D graf
perm_function - 2D View	perm_function - 3D View
Vzorec $f(\mathbf{x}, \beta) = \sum_{k=1}^{d} \left(\sum_{j=1}^{d} (j^k + \beta) \left(\frac{x_j}{j} \right)^k - 1 \right)^2$	
Zdroj https://chat.openai.com/	

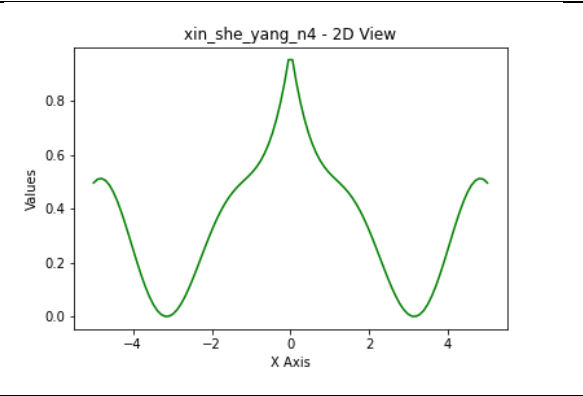| #12 / Ackley	
2D graf	3D graf
ackley - 2D View	ackley - 3D View
Vzorec $$f_1(x) = -20e^{-0.02\sqrt{D^{-1}\sum_{i=1}^{D} x_i^2}} - e^{D^{-1}\sum_{i=1}^{D}\cos(2\pi x_i)} + 20 + e$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

#13 / Xin She Yang N.4	
2D graf	3D graf

Vzorec

$$f_{172}(\mathbf{x}) = \left[\sum_{i=1}^{D} \sin^2(x_i) - e^{-\sum_{i=1}^{D} x_i^2}\right].e^{-\sum_{i=1}^{D} \sin^2 \sqrt{|x_i|}}$$
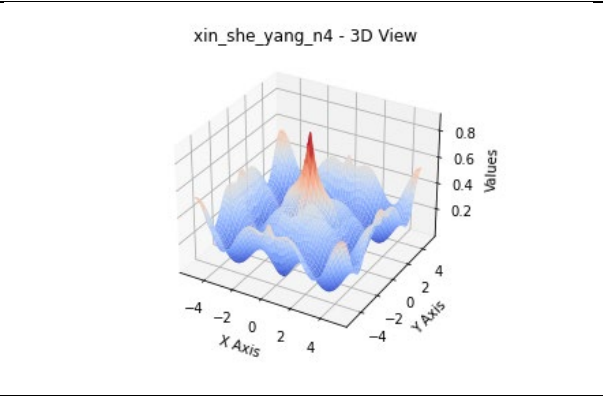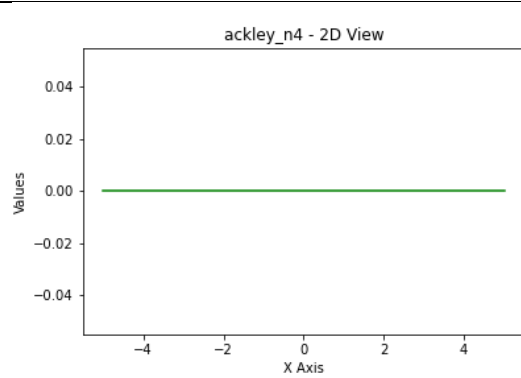
Zdroj
https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf

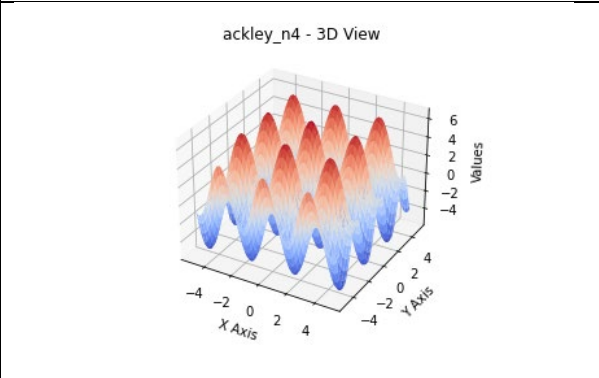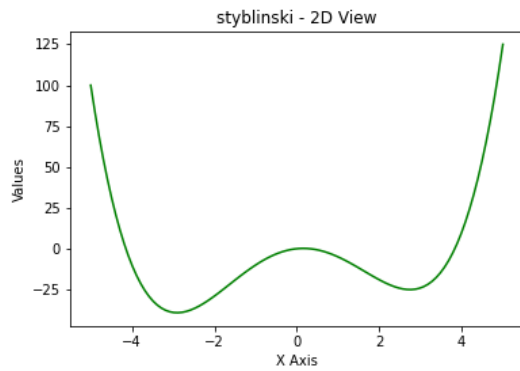| #14 / Ackley N.4	
2D graf	3D graf
ackley_n4 - 2D View	ackley_n4 - 3D View
Vzorec $$f_4(\mathbf{x}) = \sum_{i=1}^{D}\left(e^{-0.2}\sqrt{x_i^2 + x_{i+1}^2} + 3\left(\cos(2x_i) + \sin(2x_{i+1})\right)\right)$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

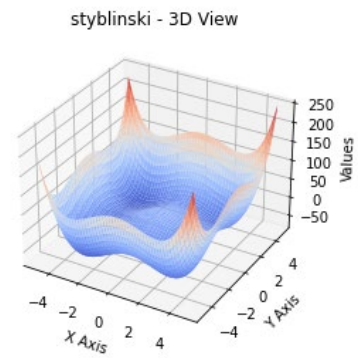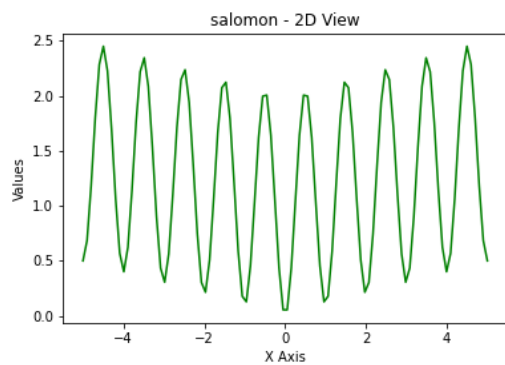| #15 / Styblinski Tang	
2D graf	3D graf
Vzorec $f_{144}(\mathbf{x}) = \frac{1}{2}\sum_{i=1}^{n}(x_i^4 - 16x_i^2 + 5x_i)$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

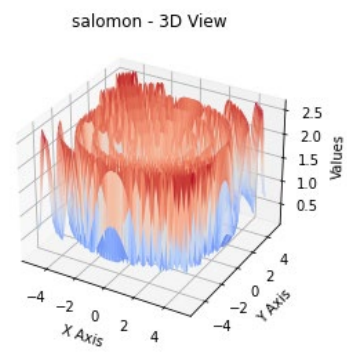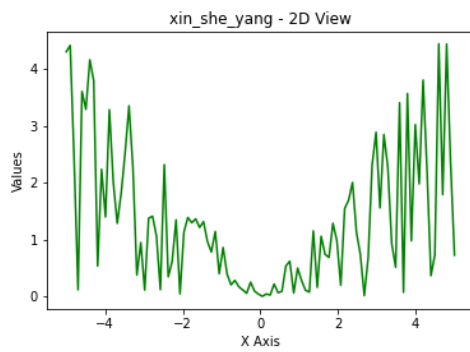| #16 / Salomon	
2D graf	3D graf
salomon - 2D View	salomon - 3D View
Vzorec $$f_{110}(\mathbf{x}) \;=\; = 1 - \cos\left(2\pi\sqrt{\sum_{i=1}^{D} x_i^2}\right) + 0.1\sqrt{\sum_{i=1}^{D} x_i^2}$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

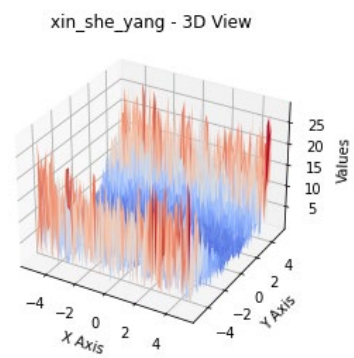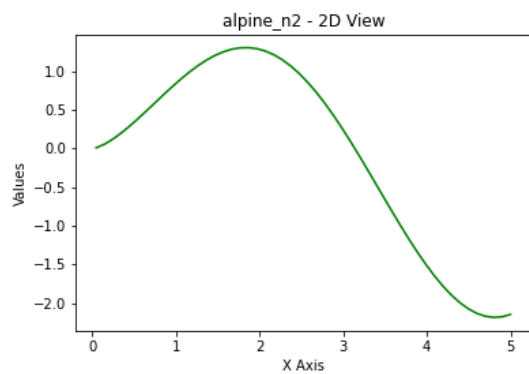| #17 / Xin She Yang	
2D graf	3D graf
xin_she_yang - 2D View	xin_she_yang - 3D View
Vzorec $$f_{169}(\mathbf{x}) \;=\; \sum_{i=1}^{D} \epsilon_i |x_i|^i$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

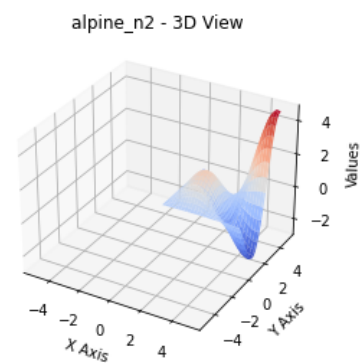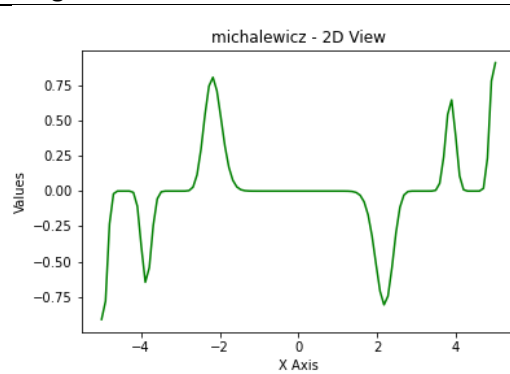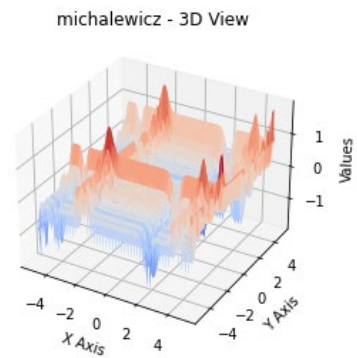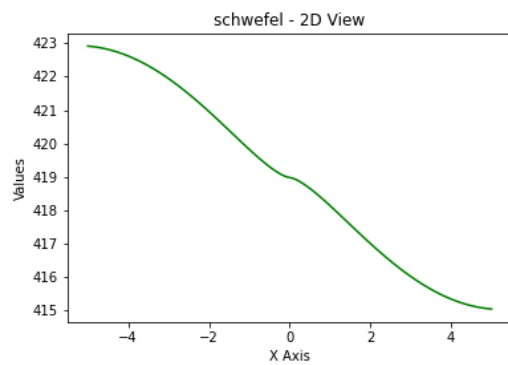| #18 / Alpine N.2	
2D graf	3D graf
Vzorec $$f_7(\mathbf{x}) \quad = \quad \prod_{i=1}^{D} \sqrt{x_i}\sin(x_i)$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

#19 / Michalewicz	
2D graf	3D graf

$$f(\mathbf{x}) = -\sum_{i=1}^{d} \sin(x_i)\sin^{2m}\left(\frac{ix_i^2}{\pi}\right)$$

Vzorec

Zdroj https://www.sfu.ca/~ssurjano/michal.html

#20 / Schwefel	
2D graf	3D graf
schwefel - 2D View	schwefel - 3D View
Vzorec $$f(\mathbf{x}) = 418.9829d - \sum_{i=1}^{d} x_i \sin(\sqrt{|x_i|})$$	
Zdroj https://www.sfu.ca/~ssurjano/schwef.html	
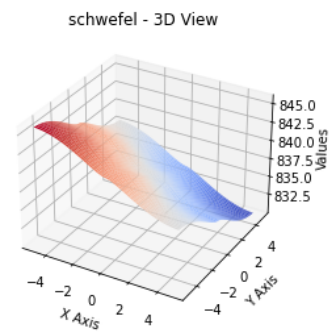
#21 / Schubert Cubic	
2D graf	3D graf
Vzorec $$f(x,y) = \left(\sum_{i=1}^{5} i \cos\left[(i+1)x + i\right] \right) \left(\sum_{i=1}^{5} i \cos\left[(i+1)y + i\right] \right)$$	
Zdroj https://chat.openai.com/	
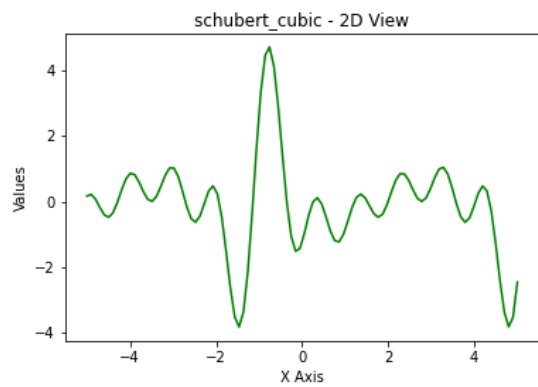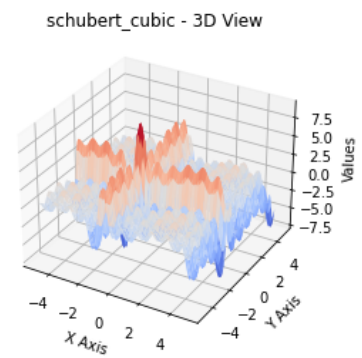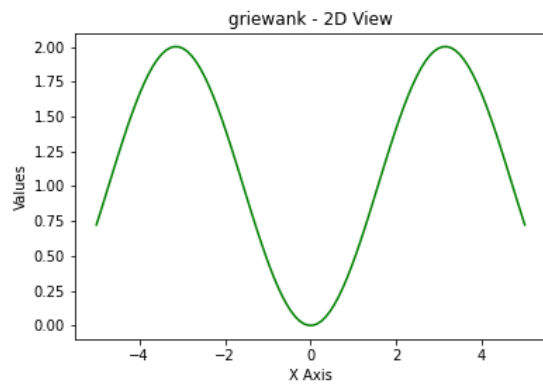
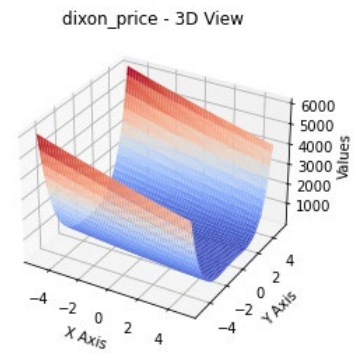| #22 / Griewank	
2D graf	3D graf
griewank - 2D View	griewank - 3D View
Vzorec $$f_{59}(\mathbf{x}) \;=\; \sum_{i=1}^{n} \frac{x_i^2}{4000} - \prod \cos\!\left(\frac{x_i}{\sqrt{i}}\right) + 1$$	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	
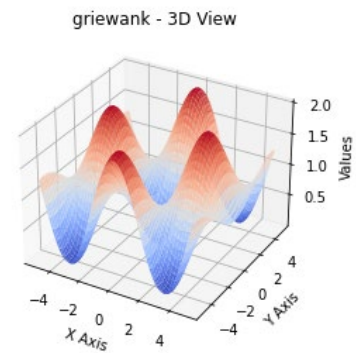
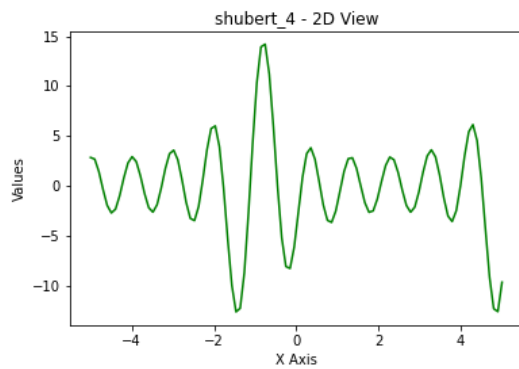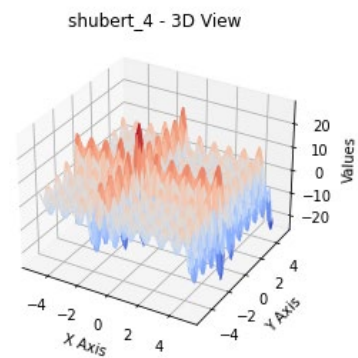| #23 / Dixon Price	
2D graf	3D graf
$$f_{48}(\mathbf{x}) \;=\; (x_1 - 1)^2 + \sum_{i=2}^{D} i(2x_i^2 - x_{i-1})^2$$ Vzorec	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	

#24 / Shubert 4	
2D graf	3D graf
shubert_4 - 2D View	shubert_4 - 3D View

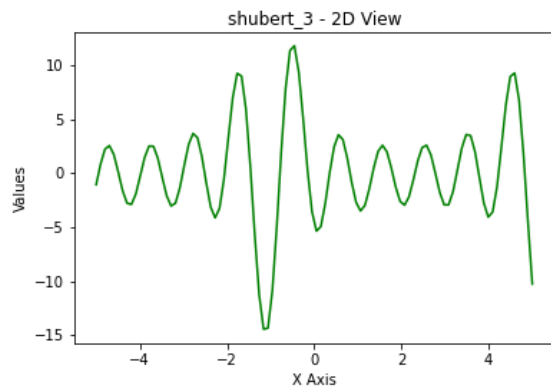$$f_{135}(\mathbf{x}) \;=\; \left(\sum_{i=1}^{D} \sum_{j=1}^{5} j\cos((j+1)x_i + j) \right)$$

Vzorec

Zdroj
https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf

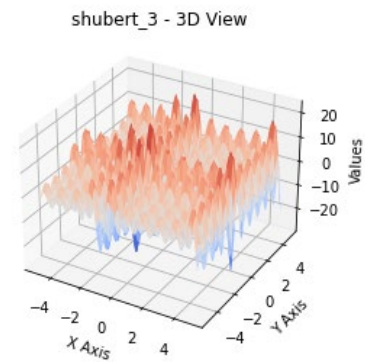| #25 / Shubert 3	
2D graf	3D graf
$$f_{134}(\mathbf{x}) = \left(\sum_{i=1}^{D} \sum_{j=1}^{5} j\sin((j+1)x_i + j) \right)$$ Vzorec	
Zdroj https://github.com/thieu1995/opfunu/blob/master/docs/source/_static/refs/name_based/A%20Literature%20Survey%20of%20Benchmark%20Functions%20For%20Global%20Optimization%20Problems.pdf	