Projekt Zaliczeniowy

Jakub Rękas, Ernest Szlamczyk

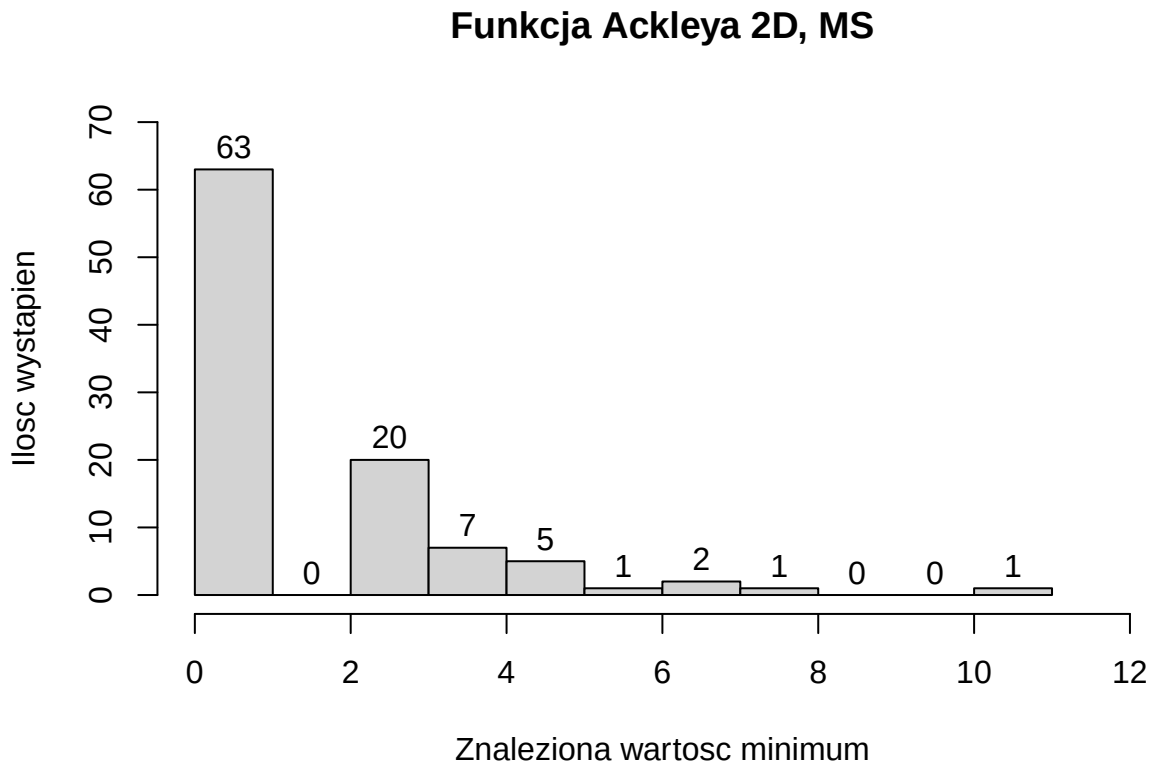
Wstęp

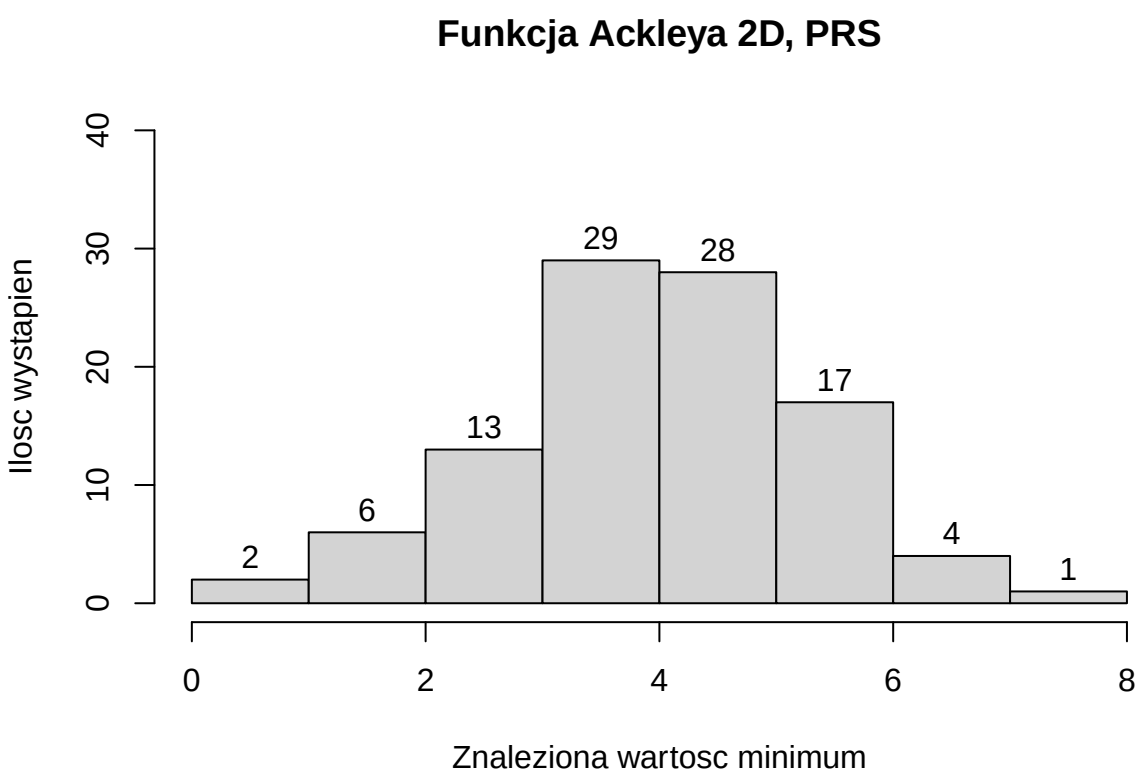
Projekt ten ma na celu proste opracowanie statystyczne wyników porównania działania wybranych algorytmów minimalizacji stochastycznej.

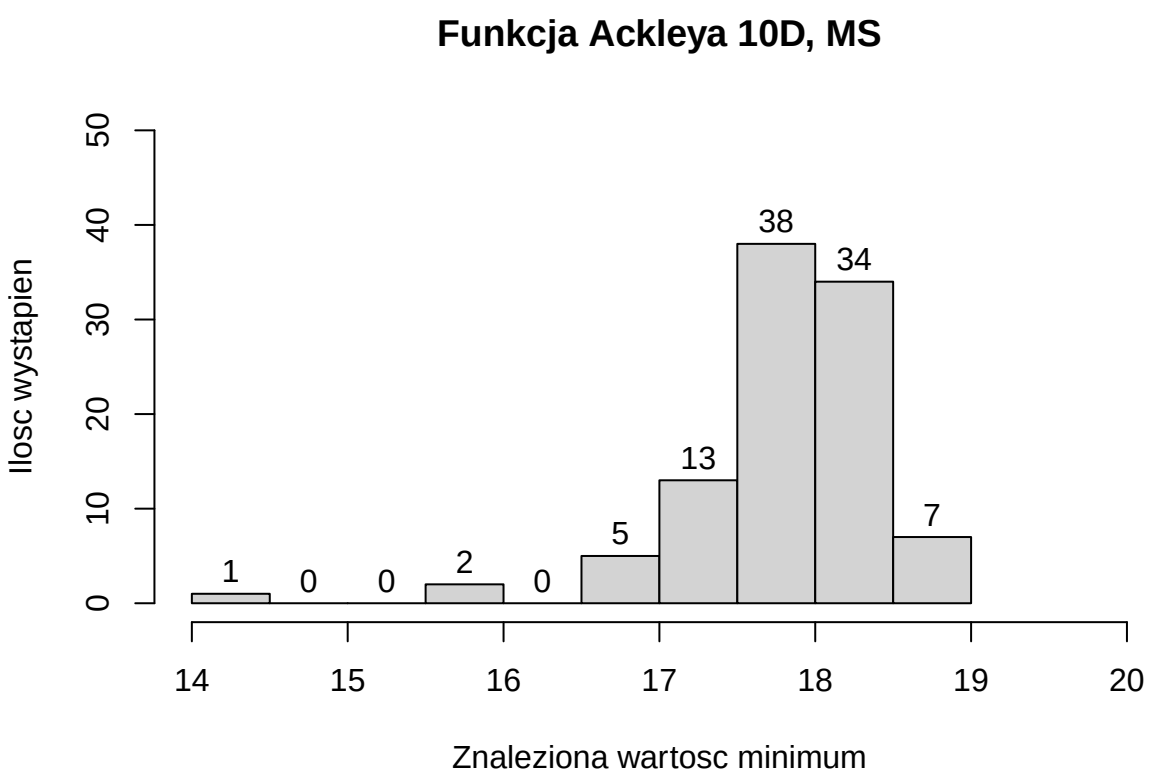
Do porównania wybraliśmy algorytmy:
* Poszukikwanie przypadkowe (Pure Random Search, PRS)
* Metoda wielokrotnego startu (multi-start, MS)

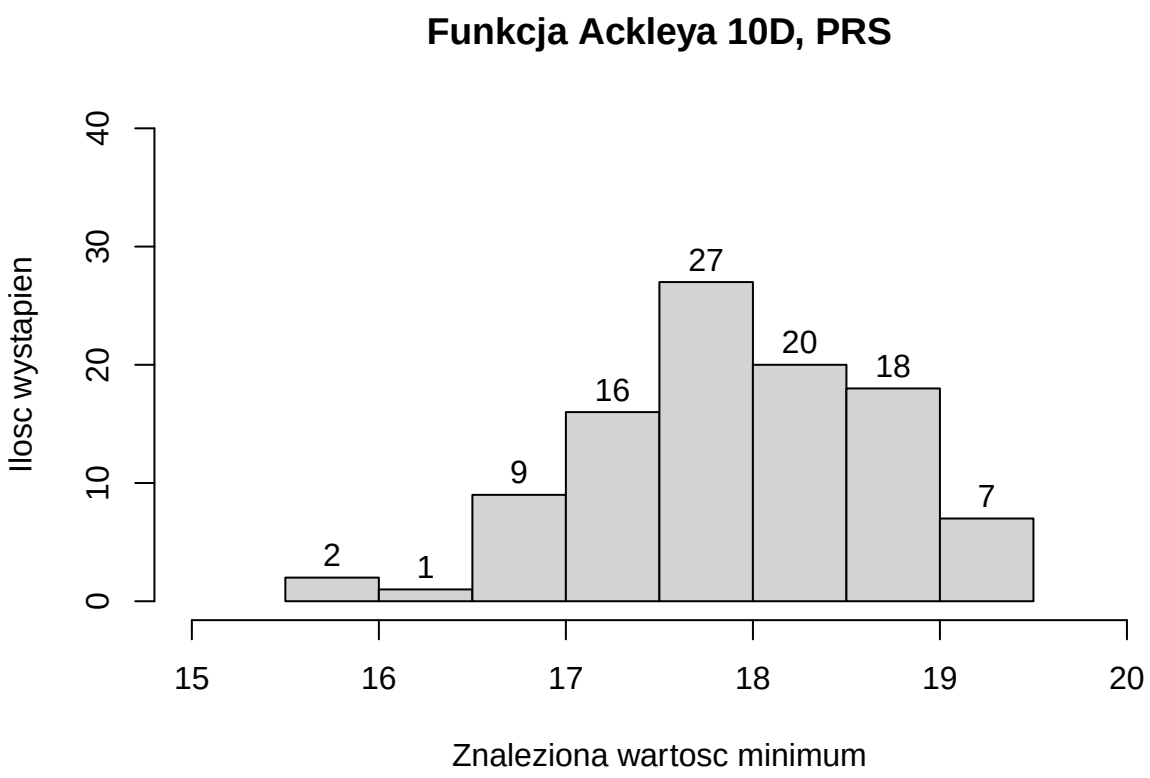
Dodatkowo użyliśmy funkji:
* Ackley'a
* Rastrigina

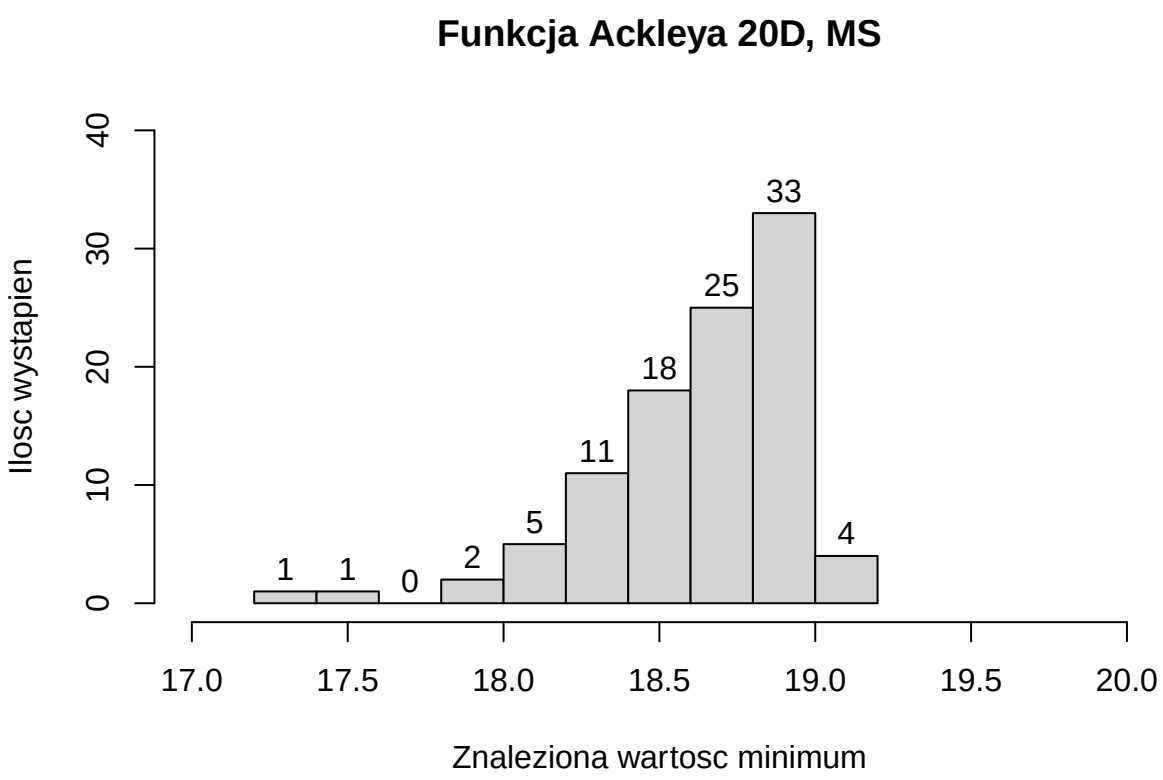
WYNIKI

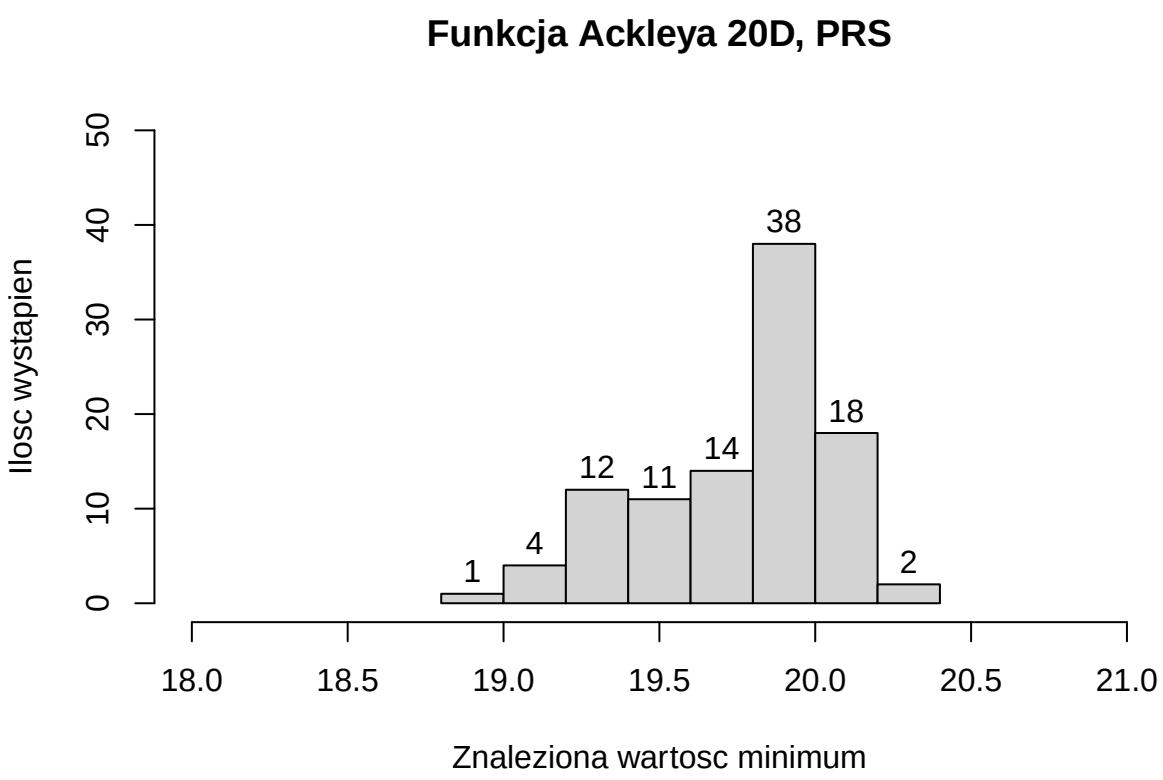


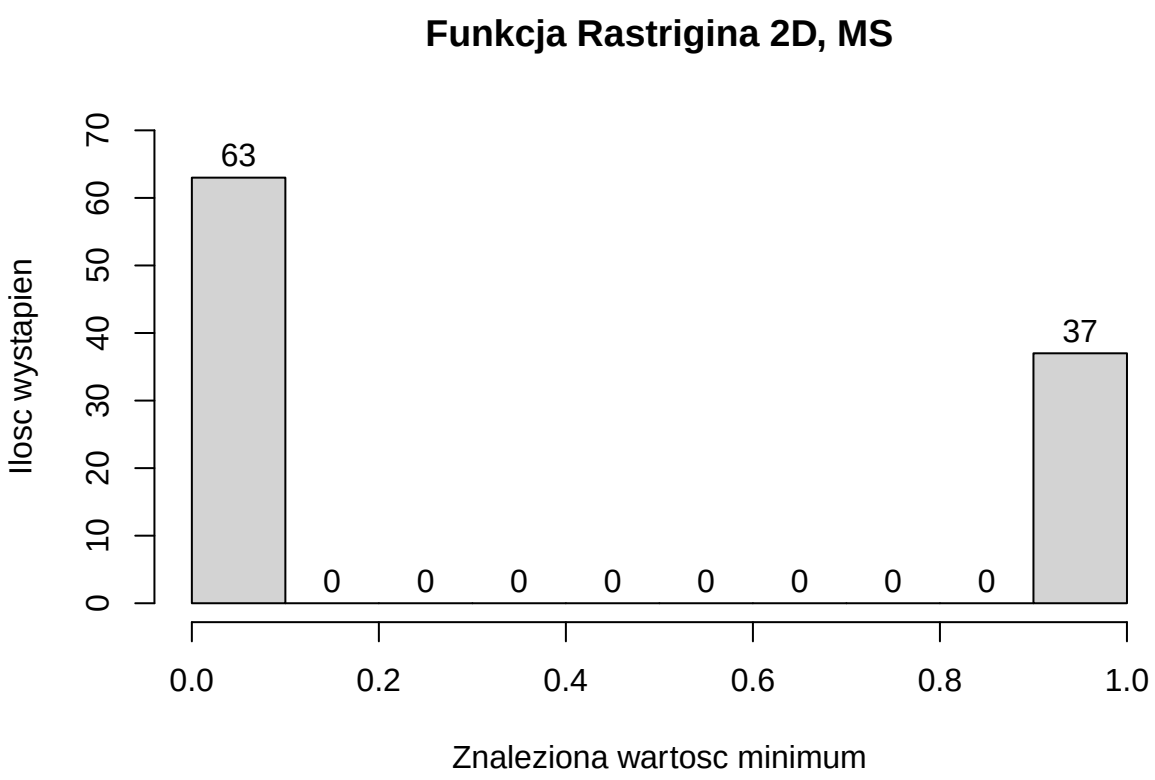

Funkcja Ackleya 2D, PRS
Ilosc wystapien
0
10
20
30
40
2
6
13
29
28
17
4
1
0
2
4
6
8
Znaleziona wartosc minimum

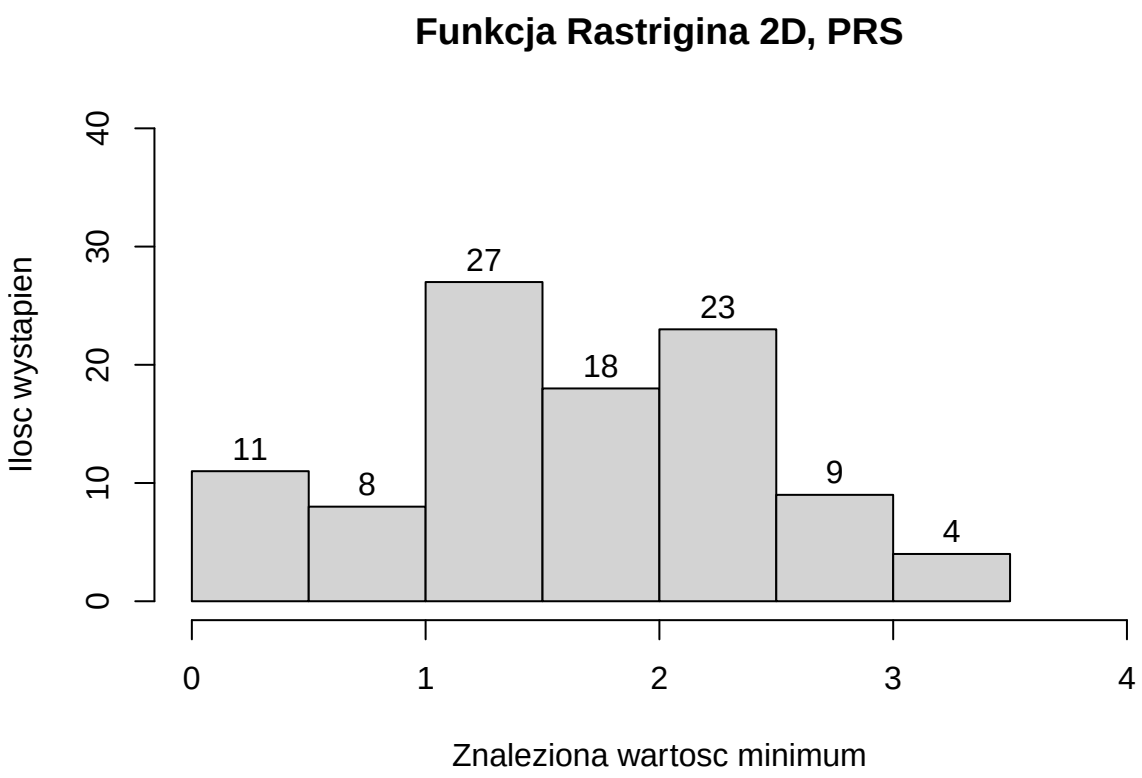

Funkcja Ackleya 10D, MS
Ilosc wystapien
0
10
20
30
40
50
1
0
0
2
0
5
13
38
34
7
14
15
16
17
18
19
20
Znaleziona wartosc minimum

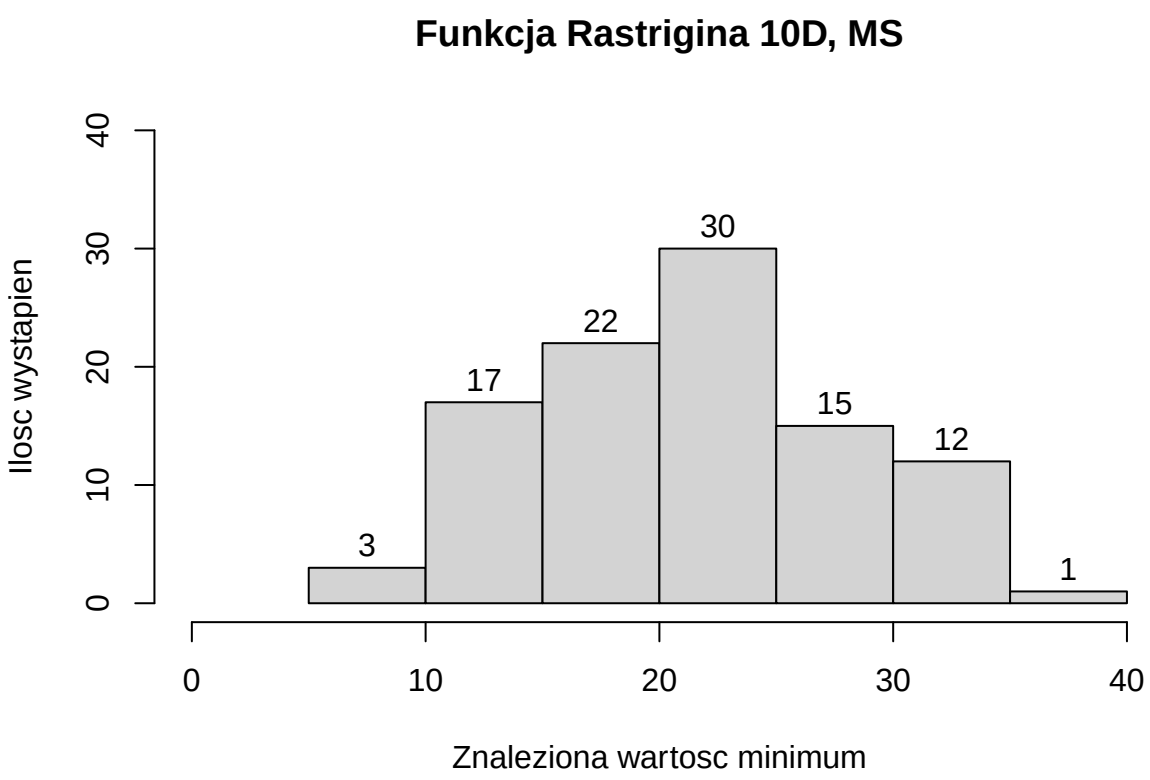

Funkcja Ackleya 10D, PRS
Ilosc wystapien
0
10
20
30
40
2
1
9
16
27
20
18
7
15
16
17
18
19
20
Znaleziona wartosc minimum

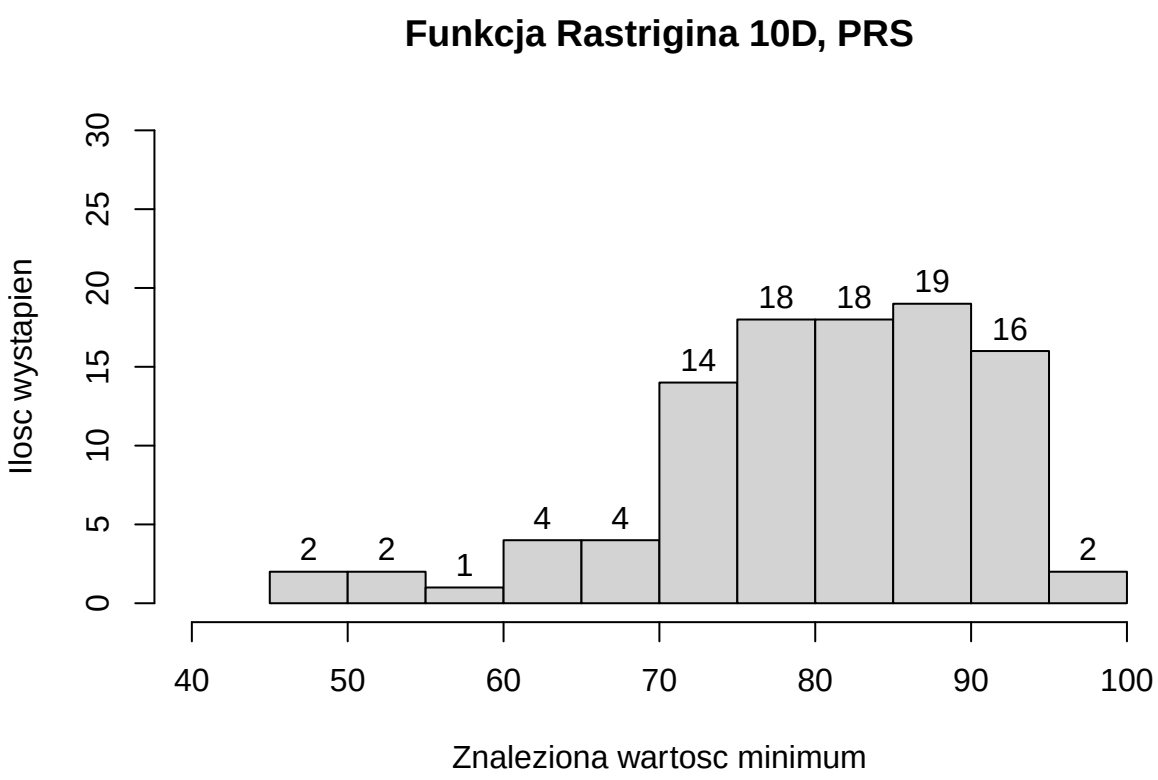

Funkcja Ackleya 20D, MS
Ilosc wystapien
0
10
20
30
40
1
1
0
2
5
11
18
25
33
4
17.0
17.5
18.0
18.5
19.0
19.5
20.0
Znaleziona wartosc minimum

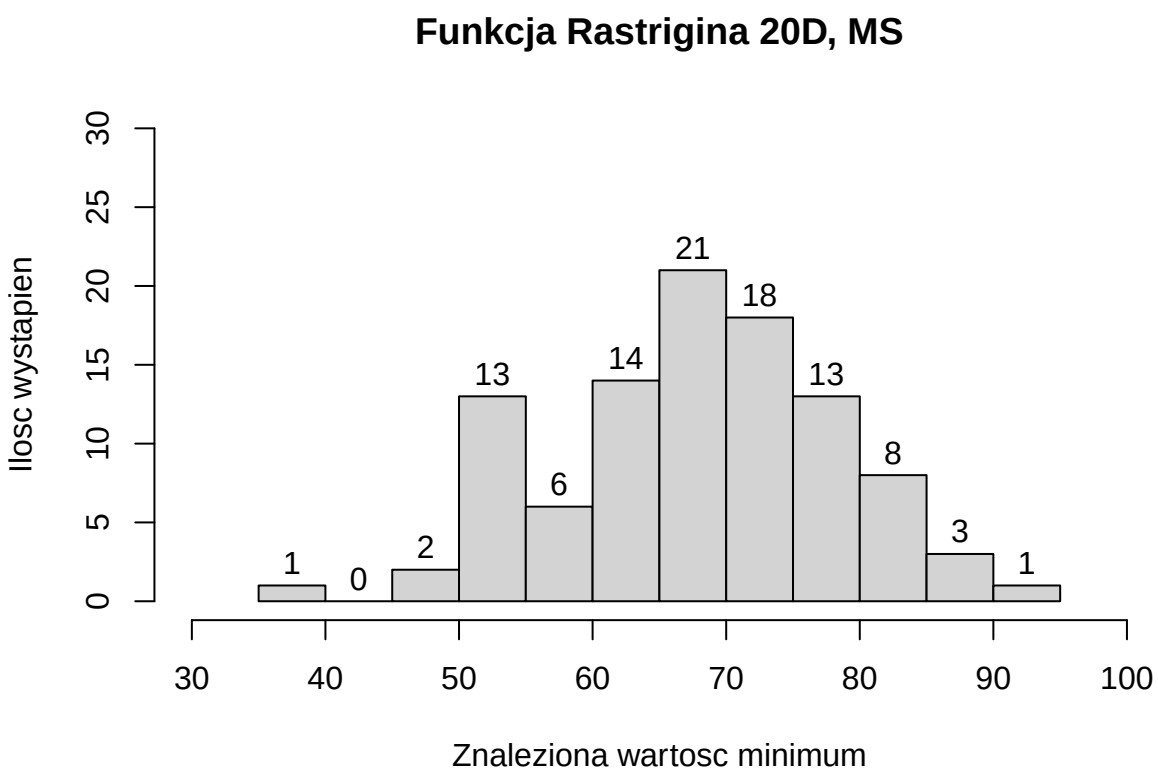

Funkcja Ackleya 20D, PRS
Ilosc wystapien
0
10
20
30
40
50
1
4
12
11
14
38
18
2
18.0
18.5
19.0
19.5
20.0
20.5
21.0
Znaleziona wartosc minimum

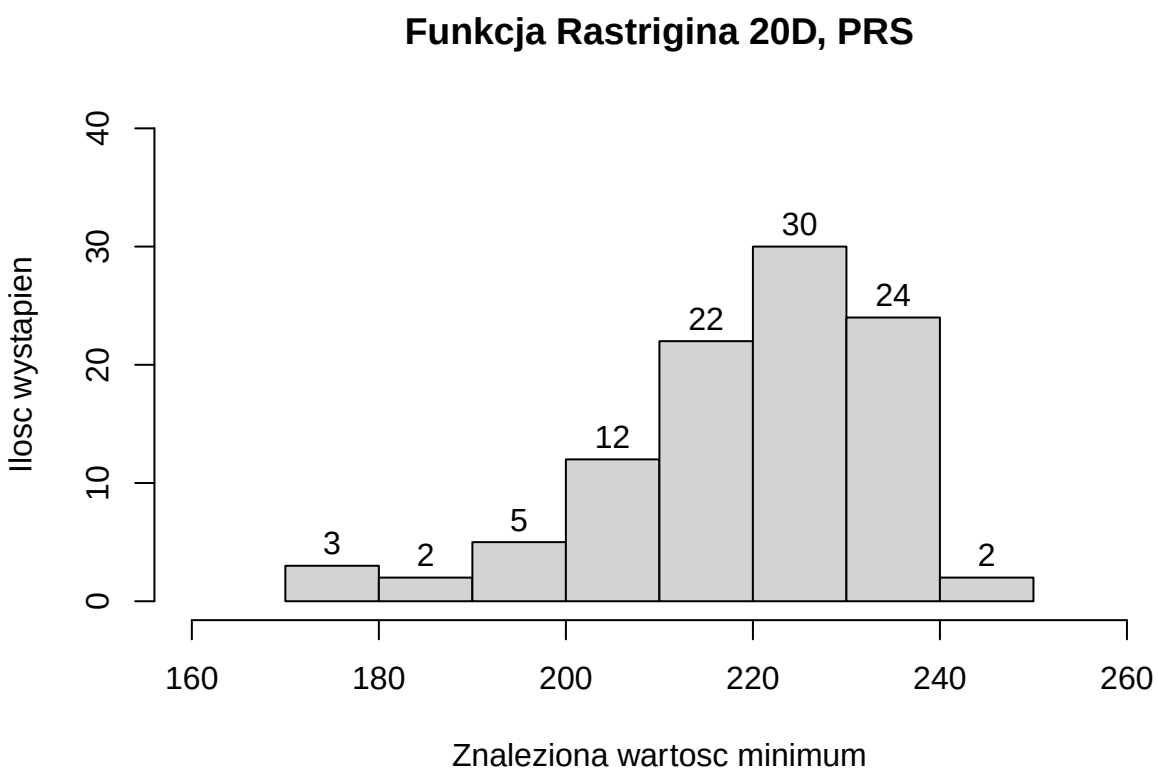

Funkcja Rastrigina 2D, MS
Ilosc wystapien
0
10
20
30
40
50
60
70
63
0
0
0
0
0
0
0
0
37
0.0
0.2
0.4
0.6
0.8
1.0
Znaleziona wartosc minimum

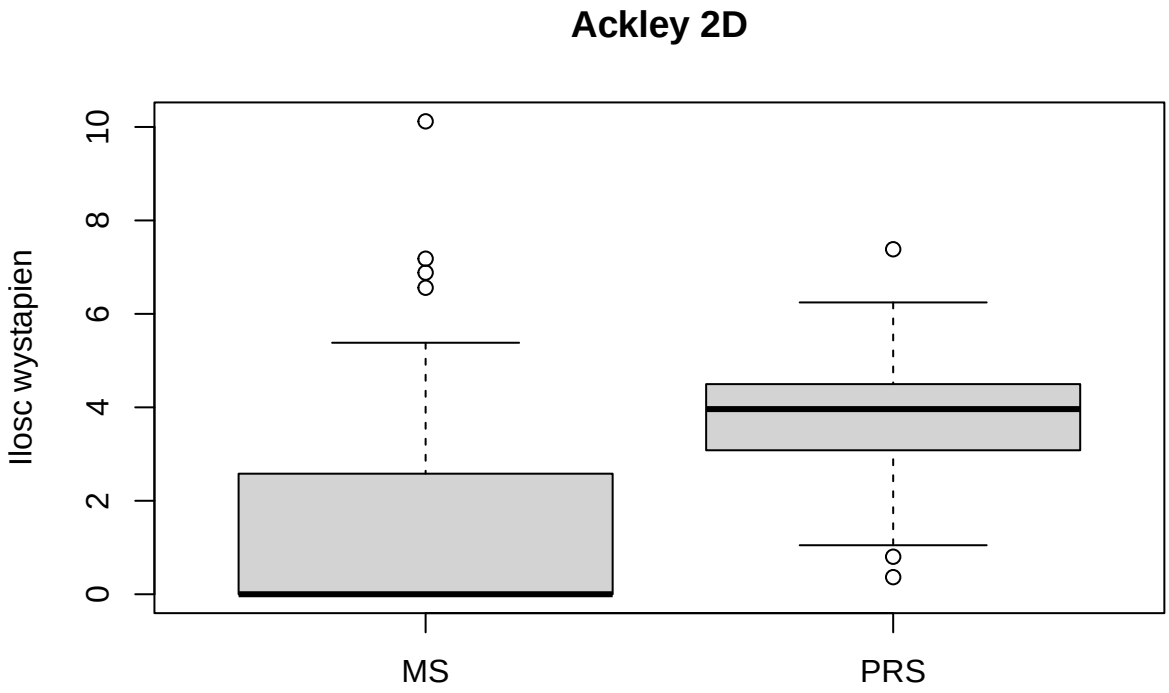

Funkcja Rastrigina 2D, PRS
Ilosc wystapien
0
10
20
30
40
11
8
27
18
23
9
4
0
1
2
3
4
Znaleziona wartosc minimum

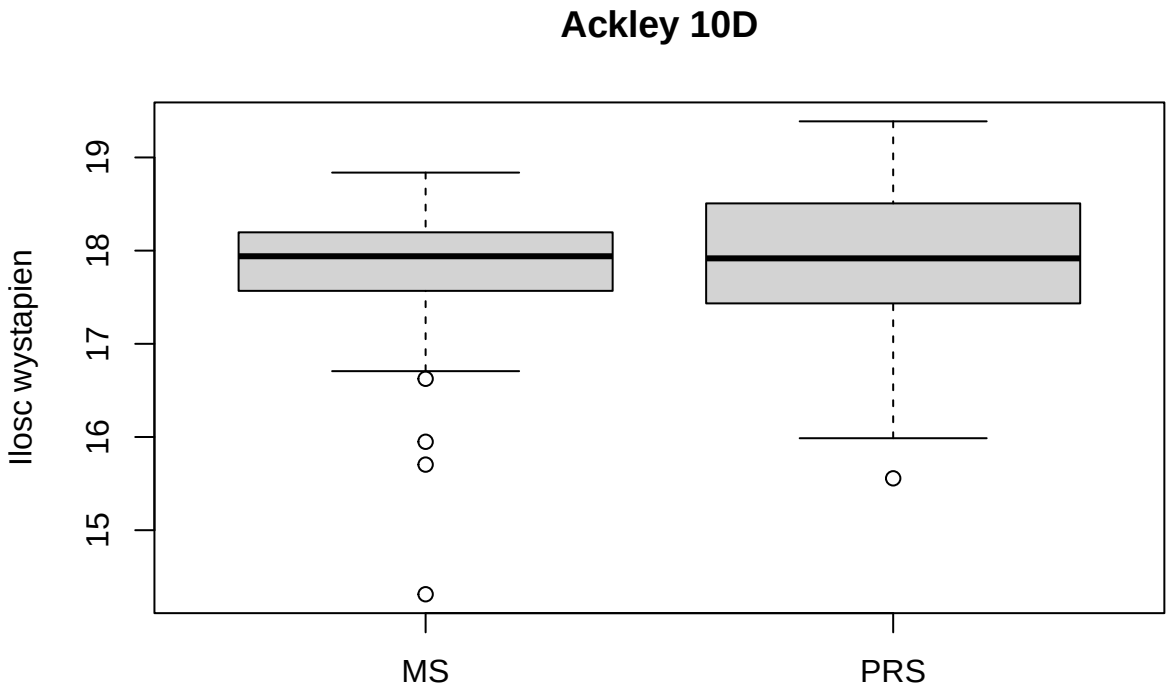

Funkcja Rastrigina 10D, MS
Ilosc wystapien
0
10
20
30
40
3
17
22
30
15
12
1
0
10
20
30
40
Znaleziona wartosc minimum

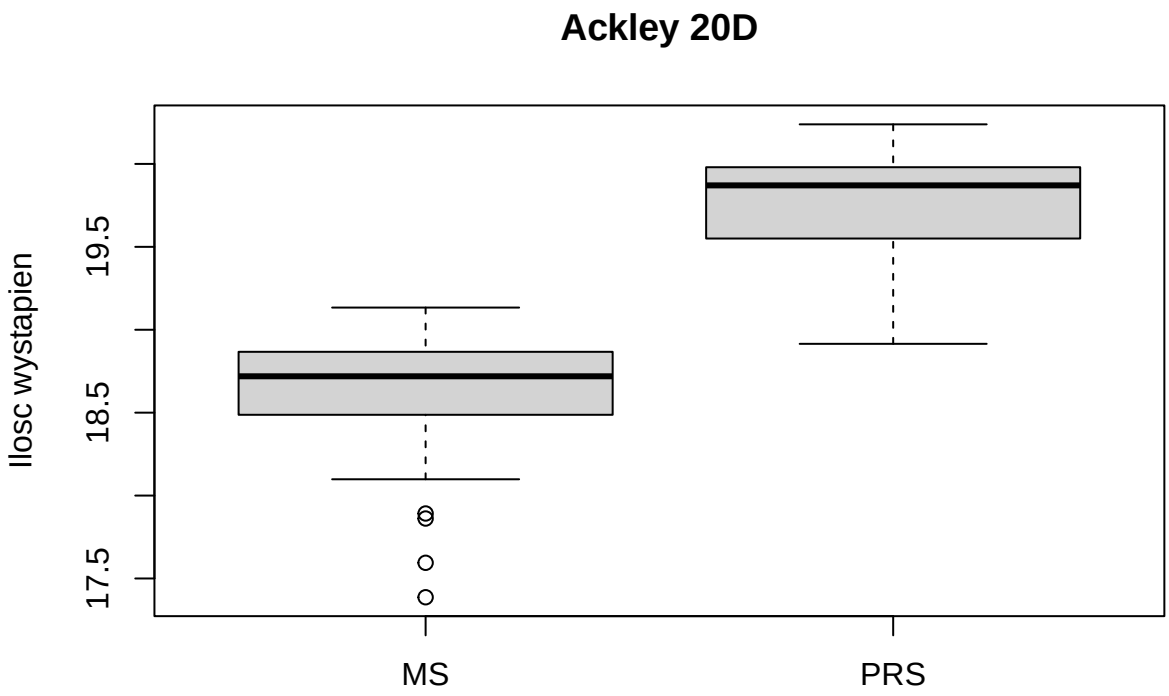

Funkcja Rastrigina 10D, PRS
Ilosc wystapien
0
5
10
15
20
25
30
2
2
1
4
4
14
18
18
19
16
2
40
50
60
70
80
90
100
Znaleziona wartosc minimum

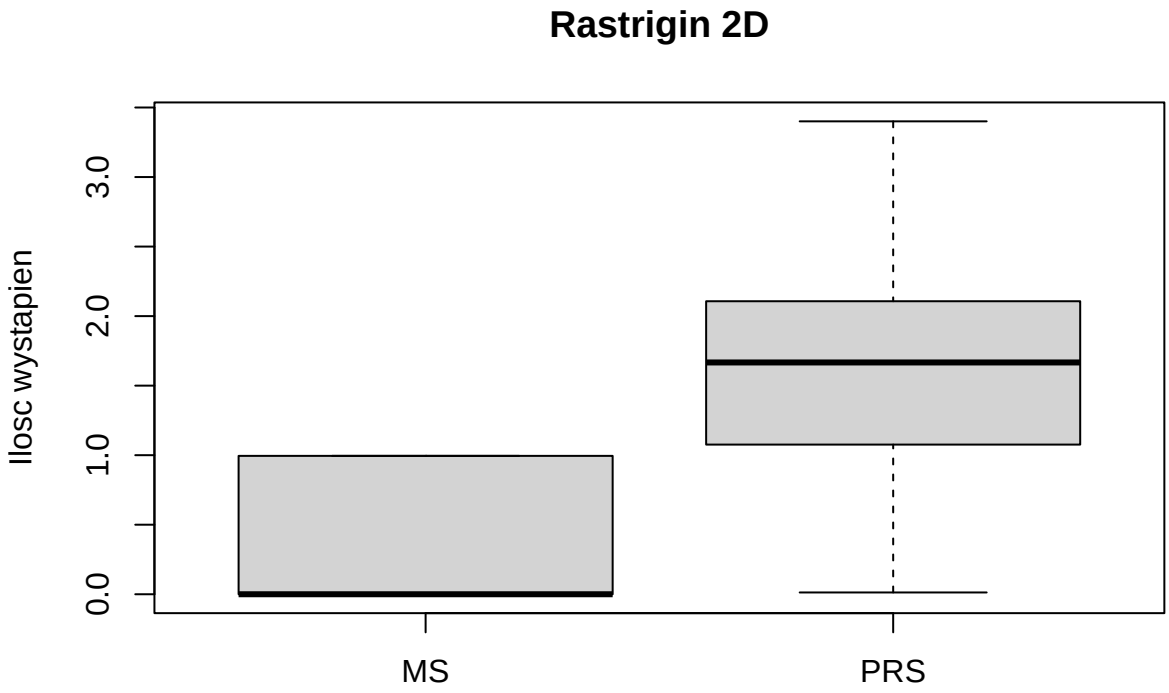

Funkcja Rastrigina 20D, MS
Ilosc wystapien
0
5
10
15
20
25
30
1
0
2
13
6
14
21
18
13
8
3
1
30
40
50
60
70
80
90
100
Znaleziona wartosc minimum

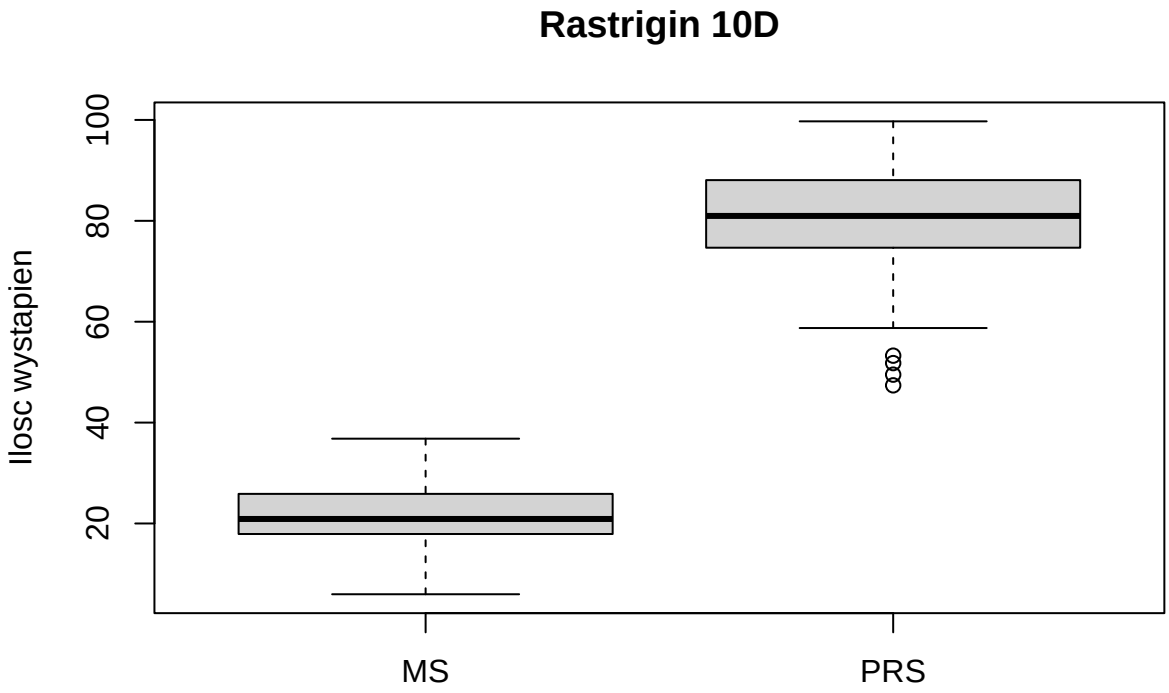

Funkcja Rastrigina 20D, PRS
Ilosc wystapien
0
10
20
30
40
3
2
5
12
22
30
24
2
160
180
200
220
240
260
Znaleziona wartosc minimum

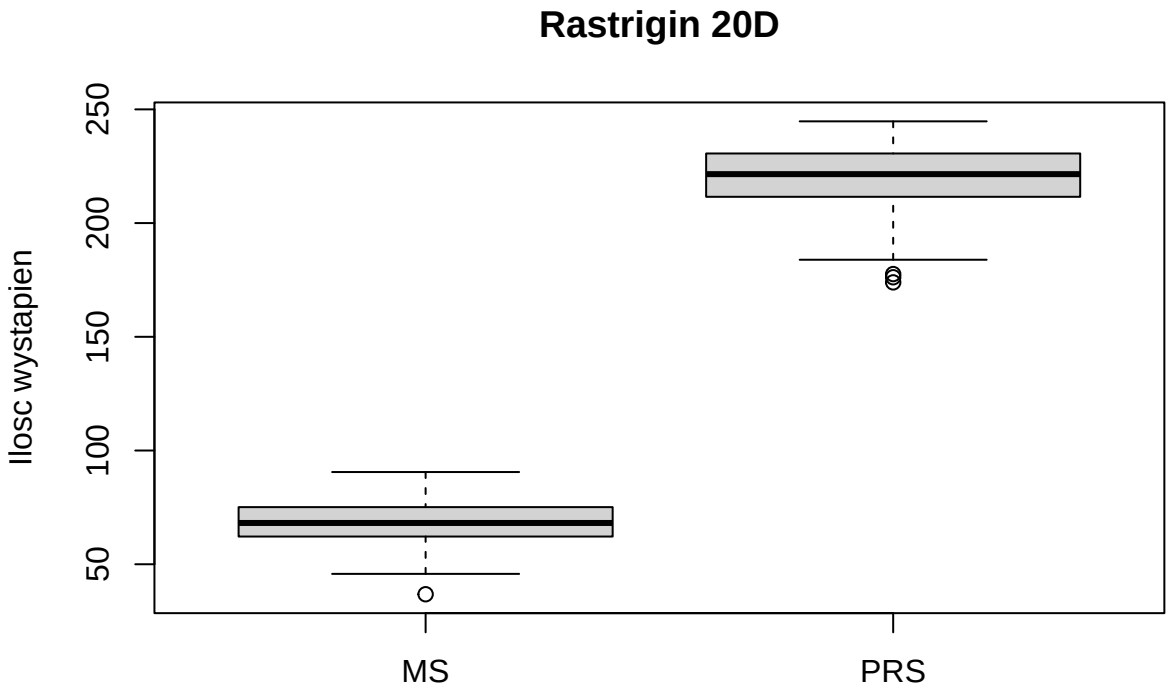

Ackley 2D
Ilosc wystapien
0
2
4
6
8
10
MS
PRS


Ackley 10D
Ilosc wystapien
15
16
17
18
19
MS
PRS


Ackley 20D
Ilosc wystapien
17.5
18.5
19.5
MS
PRS


Rastrigin 2D
Ilosc wystapien
0.0
1.0
2.0
3.0
MS
PRS


Rastrigin 10D
Ilosc wystapien
20
40
60
80
100
MS
PRS




```
##
##  Paired t-test
##
## data:  a2prs and a2ms
## t = 10.284, df = 99, p-value < 2.2e-16
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  2.016942 2.981323
## sample estimates:
## mean difference
##        2.499133

##
##  Paired t-test
##
## data:  a10prs and a10ms
## t = 1.2023, df = 99, p-value = 0.2321
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  -0.07324572  0.29849527
## sample estimates:
## mean difference
##       0.1126248

##
```

```
##  Paired t-test
##
## data:  a20prs and a20ms
## t = 26.652, df = 99, p-value < 2.2e-16
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  1.048234 1.216869
## sample estimates:
## mean difference
##        1.132552
```

```
##
##  Paired t-test
##
## data:  r2prs and r2ms
## t = 12.131, df = 99, p-value < 2.2e-16
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  1.043905 1.452183
## sample estimates:
## mean difference
##        1.248044
```

```
##
##  Paired t-test
##
## data:  r10prs and r10ms
## t = 47.17, df = 99, p-value < 2.2e-16
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  56.0803 61.0055
## sample estimates:
## mean difference
##         58.5429
```

```
##
##  Paired t-test
##
## data:  r20prs and r20ms
## t = 81.639, df = 99, p-value < 2.2e-16
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  147.2960 154.6344
## sample estimates:
## mean difference
##        150.9652
```