Zestaw 7

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3N

Szukanie minium funkcji Rosenbrocka metoda Levengerga-Marquardta.
Wykorzystujemy wbudowana funkcje Mathematici "FindMinimum" z opcja "LevenbergMarquardt".

In[63]:=
```
f[{x_, y_}] = 100 (y - x^2)^2 + (1 - x)^2;
```

In[64]:=
```
FindMinimum[100 (y - x^2)^2 + (1 - x)^2, {x, 0.1}, {y, 0.1}, Method → "LevenbergMarquardt"]
```

Out[64]=
```
{0., {x → 1., y → 1.}}
```

In[65]:=
```
FindMinimum[100 (y - x^2)^2 + (1 - x)^2, {x, 0.5}, {y, 0.1}, Method → "LevenbergMarquardt"]
```

Out[65]=
```
{0., {x → 1., y → 1.}}
```

In[66]:=
```
FindMinimum[100 (y - x^2)^2 + (1 - x)^2, {x, 1.5}, {y, 2.1}, Method → "LevenbergMarquardt"]
```

Out[66]=
```
{0., {x → 1., y → 1.}}
```

In[67]:=
```
FindMinimum[100 (y - x^2)^2 + (1 - x)^2, {x, Random[]},
 {y, Random[]}, Method → "LevenbergMarquardt"]
```

Out[67]=
```
{1.2326 × 10^-32, {x → 1., y → 1.}}
```

In[81]:=
```
i = 0;
```

In[82]:=
```
pts =
 Reap[FindMinimum[100 (y - x^2)^2 + (1 - x)^2, {x, 0.1}, {y, 0.1}, Method → "LevenbergMarquardt",
    StepMonitor :> {Sow[{x, y}], i++}]][[2, 1]]; Print["Potrzeba ", i , " krokow"];
pts = Join[{{-1.2, 1}}, pts];
```

```
Potrzeba 9 krokow
```

In[84]:=
```
ContourPlot[100 (y - x^2)^2 + (1 - x), {x, -2, 2}, {y, -2, 2}, Epilog → {Red, Point[pts]}]
```

Out[84]=