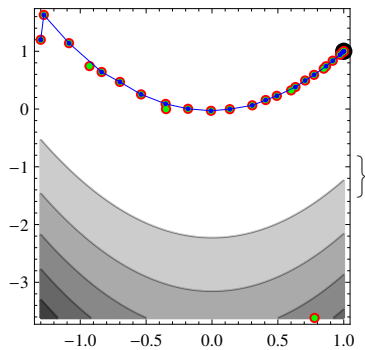


```
In[774]:= << Optimization`UnconstrainedProblems`
Rosen[x_, y_] := (1 - x)^2 + 100 (y - x^2)^2
FindMinimumPlot[Rosen[x, y], {{x, -1.3}, {y, 1.2}},
Method -> {"Newton"}
]
```

```
Out[776]= {{1.2326 × 10-30, {x -> 1., y -> 1.}},
```

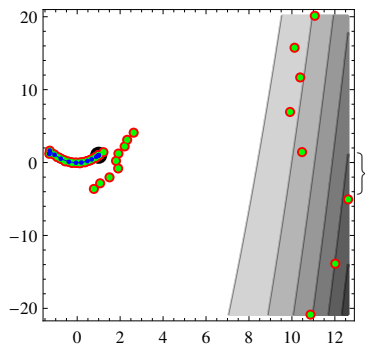
```
{Steps -> 23, Function -> 29, Gradient -> 29},
```



```
In[777]:= Rosen[x_, y_] := (1 - x)^2 + 100 (y - x^2)^2
FindMinimumPlot[Rosen[x, y], {{x, -1.3}, {y, 1.2}},
Method -> {"Newton", "StepControl" -> {"LineSearch", "CurvatureFactor" -> .1}}
]
```

```
Out[778]= {{1.78283 × 10-20, {x -> 1., y -> 1.}},
```

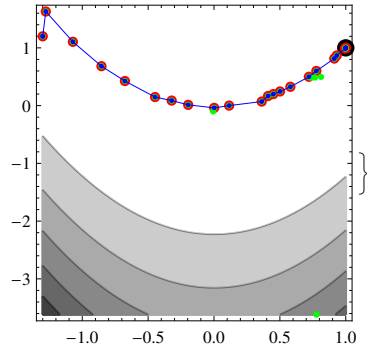
```
{Steps -> 14, Function -> 62, Gradient -> 62},
```



```
In[779]:= FindMinimumPlot[Rosen[x, y], {{x, -1.3}, {y, 1.2}},
  Method → {"Newton", "StepControl" → {"LineSearch", Method → "Backtracking"}}
]
```

Out[779]= $\{3.54447 \times 10^{-18}, \{x \rightarrow 1., y \rightarrow 1.\}\},$

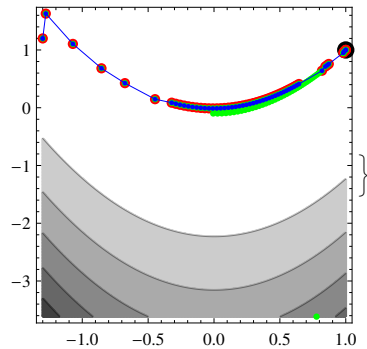
{Steps → 22, Function → 28, Gradient → 23},



```
In[781]:= FindMinimumPlot[Rosen[x, y], {{x, -1.3}, {y, 1.2}},
  Method → {"Newton", "StepControl" →
    {"LineSearch", Method → {"Backtracking", "BacktrackFactors" → 0.1}}}
]
```

Out[781]= $\{4.1238 \times 10^{-21}, \{x \rightarrow 1., y \rightarrow 1.\}\},$

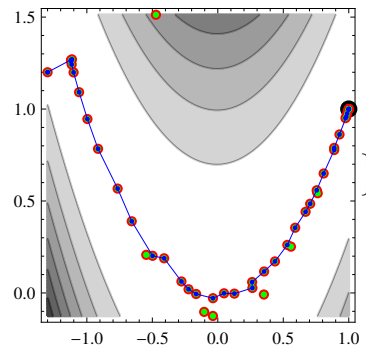
{Steps → 52, Function → 93, Gradient → 53},



```
In[783]:= FindMinimumPlot[Rosen[x, y], {{x, -1.3}, {y, 1.2}},  
Method -> {"QuasiNewton", "StepMemory" -> 5},  
]
```

```
Out[783]= {{1.20847 × 10-23, {x -> 1., y -> 1.}},
```

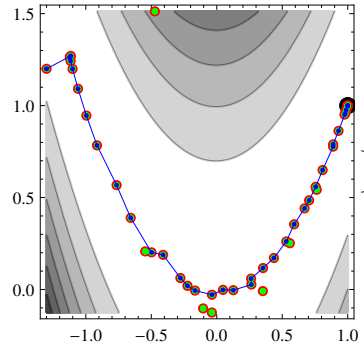
```
{Steps -> 40, Function -> 49, Gradient -> 49},
```



```
In[791]:= RosenN[x_?NumberQ, y_?NumberQ] := (1 - x)^2 + 100 (-x^2 + y)^2
FindMinimumPlot[RosenN[x, y], {{x, -1.3}, {y, 1.2}},
  Method -> {"QuasiNewton", "StepMemory" -> 5}
]
FindMinimumPlot[RosenN[x, y], {{x, -1.3}, {y, 1.2}},
  Method -> "Newton"
]
```

Out[792]= $\{ \{ 2.00559 \times 10^{-11}, \{x \rightarrow 0.999996, y \rightarrow 0.999991\} \},$

$\{ \text{Steps} \rightarrow 40, \text{Function} \rightarrow 196, \text{Gradient} \rightarrow 49 \},$



Out[793]= $\{ \{ 3.29218 \times 10^{-6}, \{x \rightarrow 0.998186, y \rightarrow 0.996372\} \},$

$\{ \text{Steps} \rightarrow 23, \text{Function} \rightarrow 336, \text{Gradient} \rightarrow 102 \},$

