

1.

\* Run `main.m` and see the result.

```
>> main
```

From the Golden Search Method,

When  $x = 9.629560$ , has the local minimum =  $-90.790896$

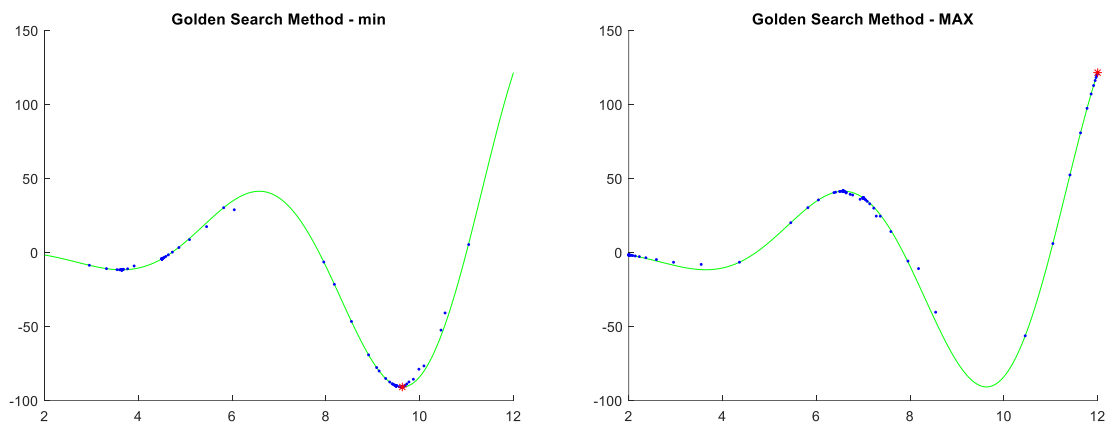
When  $x = 12.000000$ , has the local maximum =  $121.514939$

From the Fibonacci Method,

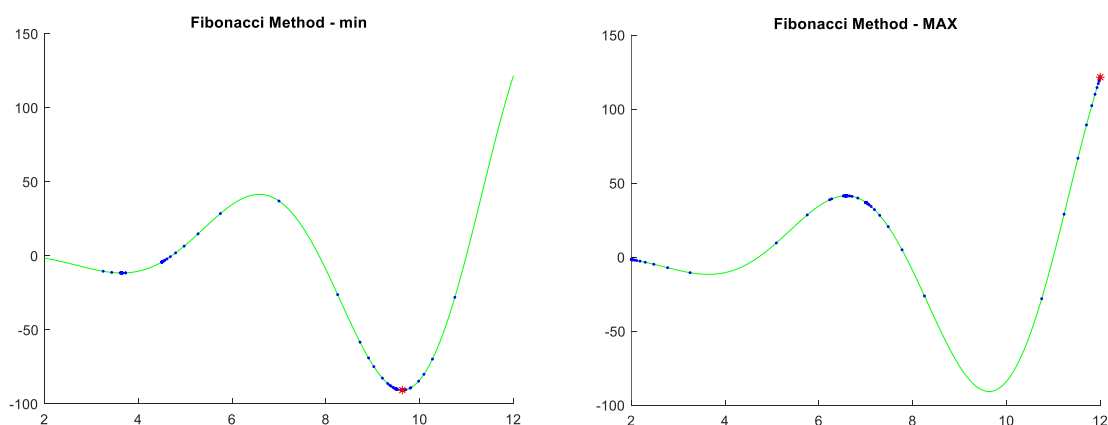
When  $x = 9.629560$ , has the local minimum =  $-90.790896$

When  $x = 12.000000$ , has the local maximum =  $121.514935$

Golden Search Method figure



Fibonacci Method figure



\* Both use interval = 2.5

2.

\* Run `main.m` and see the result.

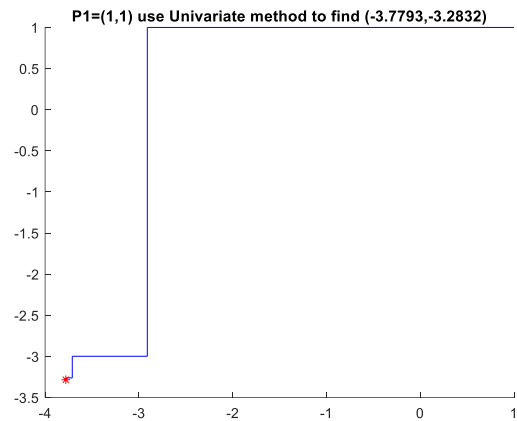
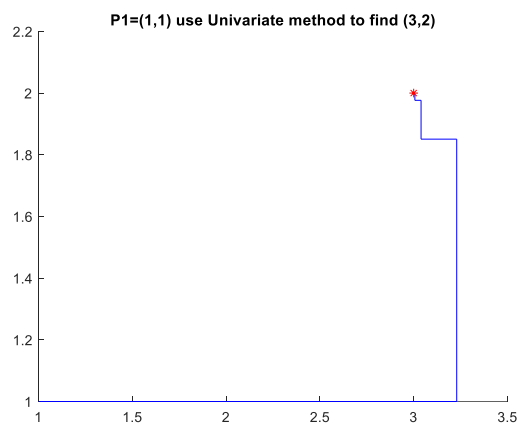
```
>> main
```

From the Univariate Method,

When  $x = 3.000000$ , has the local minimum = 2.000000

From the Univariate Method,

When  $x = -3.779310$ , has the local minimum = -3.283186



\* Both start from (1,1) and set tolerance =  $10^{-11}$

\* To find (3,2), set the searching interval = [-2, 5].

\* To find (-3.7793,-3.2832), set the searching interval = [-5, 2].

3.

\* Run `main.m` and see the result.

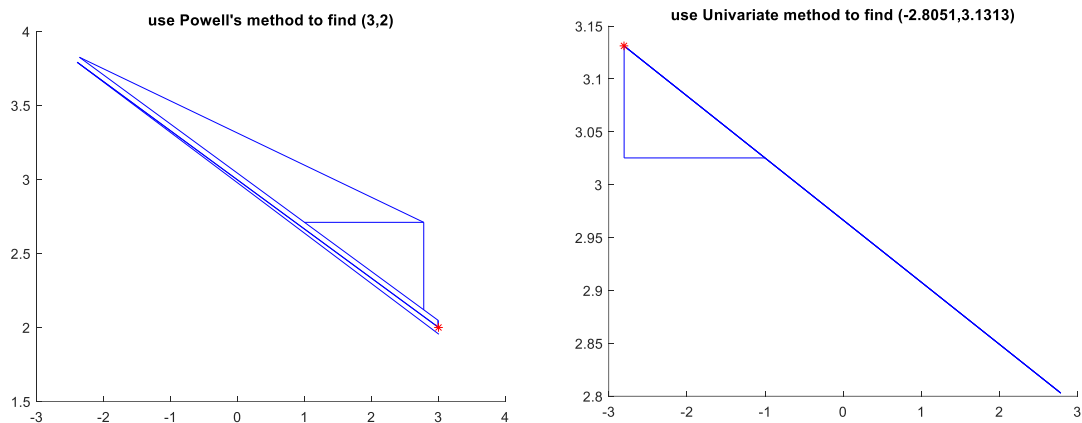
```
>> main
```

From the Powell's conjugate direction Method,

When  $x = 3.000000$ , has the local maximum = 2.000000

From the Powell's conjugate direction Method,

When  $x = -2.805118$ , has the local maximum = 3.131312



\* Both set the searching interval =  $[-5, 5]$  and set the tolerance =  $10^{-17}$ .

\* To find (3,2), set the initial point = (1,0).

\* To find (-2.8051,3.1313), set the initial point = (-1,0).