

```

cur_x=3
rate=0.01
precision=0.000001
previous_state_size=1
max_iters=1000
iters=0
df=lambda x:2*(x+5)

while previous_state_size > precision and iters<max_iters:
    prev_x=cur_x
    cur_x=cur_x-rate*df(prev_x)
    previous_state_size=abs(cur_x-prev_x)

    iters=iters+1
    print("\nPrevious state size ",previous_state_size)
    # print("\nIteration",iters,"\nX value is",cur_x)
    print("The local minimum occurs at",cur_x)

```



```

Previous state size  6.69779349316002e-06
The local minimum occurs at -4.999671808118838

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Previous state size  6.563837623652091e-06
The local minimum occurs at -4.9996783719564615

```

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Previous state size  6.432560870628379e-06
The local minimum occurs at -4.999684804517332

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Previous state size  6.303909652949358e-06
The local minimum occurs at -4.999691108426985

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Previous state size  6.177831460618677e-06
The local minimum occurs at -4.999697286258446

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Previous state size  6.054274830802342e-06
The local minimum occurs at -4.9997033405332765

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Previous state size  5.933189334506039e-06
The local minimum occurs at -4.999709273722611

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Previous state size  5.814525548153426e-06
The local minimum occurs at -4.999715088248159

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Previous state size  5.6982350367107415e-06
The local minimum occurs at -4.999720786483196

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Previous state size  5.584270335923236e-06
The local minimum occurs at -4.999726370753532

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Previous state size  5.472584929222535e-06
The local minimum occurs at -4.999731843338461

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The local minimum occurs at -4.999732613335102

Previous state size 5.363133230851247e-06
The local minimum occurs at -4.999737206471692

Previous state size 5.25587056632304e-06
The local minimum occurs at -4.999742462342258

Previous state size 5.150753154659071e-06
The local minimum occurs at -4.999747613095413

Previous state size 5.047738091512599e-06
The local minimum occurs at -4.999752660833504

Previous state size 4.9467833296290564e-06
The local minimum occurs at -4.999757607616834

Previous state size 4.847847663747018e-06
The local minimum occurs at -4.999762455464498

Previous state size 4.750890710170097e-06
The local minimum occurs at -4.999767206355208

Previous state size 4.655872896108804e-06
The local minimum occurs at -4.999771862228104

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