```
cur_x = 3 # The algorithm starts at x=3
rate = 0.01 # Learning rate
precision = 0.000001 #This tells us when to stop the algorithm
previous_step_size = 1 #
max_iters = 10000 # maximum number of iterations
iters = 0 #iteration counter
df = lambda x: 2*(x+5) #Gradient of our function


while previous_step_size > precision and iters < max_iters:
    prev_x = cur_x #Store current x value in prev_x
    cur_x = cur_x - rate * df(prev_x) #Grad descent
    previous_step_size = abs(cur_x - prev_x) #Change in x
    iters = iters+1 #iteration count
    print("Iteration",iters,"\nX value is",cur_x) #Print iterations

print("The local minimum occurs at", cur_x)
```

```
Iteration 1
X value is 2.84
Iteration 2
X value is 2.6832
Iteration 3
X value is 2.529536
Iteration 4
X value is 2.37894528
Iteration 5
X value is 2.2313663744
Iteration 6
X value is 2.0867390469119997
Iteration 7
X value is 1.9450042659737599
Iteration 8
X value is 1.8061041806542846
Iteration 9
X value is 1.669982097041199
Iteration 10
X value is 1.5365824551003748
Iteration 11
X value is 1.4058508059983674
Iteration 12
X value is 1.2777337898784
Iteration 13
X value is 1.152179114080832
Iteration 14
X value is 1.0291355317992152
Iteration 15
X value is 0.9085528211632309
Iteration 16
X value is 0.7903817647399662
Iteration 17
X value is 0.6745741294451669
Iteration 18
X value is 0.5610826468562635
```

```
Iteration 19
X value is 0.44986099391913825
Iteration 20
X value is 0.3408637740407555
Iteration 21
X value is 0.23404649855994042
Iteration 22
X value is 0.1293655685887416
Iteration 23
X value is 0.026778257216966764
Iteration 24
X value is -0.07375730792737258
Iteration 25
X value is -0.1722821617688251
Iteration 26
X value is -0.2688365185334486
Iteration 27
X value is -0.36345978816277963
Iteration 28
X value is -0.45619059239952403
Iteration 29
X value is -0.5470667805515336
Iteration 30
```

Start coding or generate with AI.