```
import numpy as np

def gradient_descent(x, y):
  m_cur = b_cur = 0
  iterations = 100000
  n = len(x)
  learning_rate = 0.0003

  for i in range(iterations):
    y_predicted = m_cur * x + b_cur
    cost = (1/n) * sum([val**2 for val in (y-y_predicted)])
    md = -(2/n) * sum(x * (y - y_predicted))
    bd = -(2/n) * sum(y - y_predicted)

    m_cur = m_cur - learning_rate * md
    b_cur = b_cur - learning_rate * bd


    print(f"m {m_cur}, b {b_cur}, cost {cost} iteration {i}")

  y_pred = m_cur * x + b_cur
  print(f"Predicted values : {y_pred}")


x = np.array([1,2,3,4,5])
y = np.array([5,7,9,11,13])

gradient_descent(x, y)
```

```
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9509
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95091
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9509
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95093
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9509
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95095
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9509
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95097
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9509
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95099
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9510
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95101
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9510
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95103
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9510
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95105
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9510
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95107
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9510
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95109
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9511
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95111
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9511
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95113
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9511
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95115
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9511
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95117
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9511
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95119
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9512
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95121
m 2.000000000000001, b 2.9999999999999947, cost 1.0255191767873153e-29 iteration 9512
m 2.000000000000002, b 2.999999999999995, cost 1.0255191767873153e-29 iteration 95123
```

```
x = np.array([78, 34, 67, 35, 71, 44, 54, 34, 25, 69])
y = np.array([111.86, 50.26, 96.46, 51.66, 102.06, 64.26, 78.26, 50.26, 37.66, 99.26])

gradient_descent(x, y)
```

```
m 1.4000572059660634, b 2.656710054068985, cost 1.2070187013141633e-06 iteration 9996
m 1.40005720214011, b 2.6567102741016244, cost 1.206857255107352e-06 iteration 99962
m 1.400057198314412б, b 2.656710494119548, cost 1.2066958305088501e-06 iteration 9996
m 1.400057194488971, b 2.6567107141227564, cost 1.2065344274941961e-06 iteration 9996
m 1.400057190663785, b 2.656710934111251, cost 1.2063730460699862e-06 iteration 99965
m 1.4000571868388554, b 2.6567111540850323, cost 1.206211686240743e-06 iteration 9996
m 1.400057183014181, b 2.656711374044102, cost 1.2060503479920638e-06 iteration 99967
m 1.400057179189763, b 2.6567115939884607, cost 1.2058890313170814e-06 iteration 9996
m 1.4000571753656001, b 2.6567118139181094, cost 1.2057277362161871e-06 iteration 999
m 1.4000571715416936, b 2.6567120338330494, cost 1.2055664626951898e-06 iteration 999
m 1.4000571677180425, b 2.6567122537332812, cost 1.2054052107383724e-06 iteration 999
m 1.4000571638946473, b 2.656712473618806, cost 1.2052439803567178e-06 iteration 9997
m 1.4000571600715073, b 2.656712693489625, cost 1.205082771551004e-06 iteration 99973
m 1.4000571562486237, b 2.656712913345739, cost 1.2049215842879934e-06 iteration 9997
m 1.4000571524259953, b 2.6567131331871487, cost 1.204760418599134e-06 iteration 9997
m 1.4000571486036226, b 2.6567133530138554, cost 1.2045992744630983e-06 iteration 999
m 1.400057144781506, b 2.65671357282586, cost 1.204438151873056e-06 iteration 99977
m 1.4000571409596443, b 2.6567137926231634, cost 1.2042770508474112e-06 iteration 999
m 1.400057137138039, b 2.6567140124057667, cost 1.2041159713558507e-06 iteration 9997
m 1.4000571333166885, b 2.656714232173671, cost 1.2039549134236853e-06 iteration 9998
m 1.4000571294955944, b 2.6567144519268773, cost 1.2037938770208545e-06 iteration 999
m 1.4000571256747552, b 2.6567146716653864, cost 1.2036328621647265e-06 iteration 999
m 1.4000571218541717, b 2.6567148913891994, cost 1.2034718688462541e-06 iteration 999
m 1.4000571180338437, b 2.656715111098317, cost 1.203310897062817e-06 iteration 99984
m 1.4000571142137714, b 2.6567153307927405, cost 1.2031499468132527e-06 iteration 999
m 1.4000571103939543, b 2.6567155504724704, cost 1.2029890180712316e-06 iteration 999
m 1.400057106574393, b 2.656715770137508, cost 1.202828110875574e-06 iteration 99987
m 1.4000571027550868, b 2.656715989787855, cost 1.2026672251965662e-06 iteration 9998
m 1.4000570989360364, b 2.6567162094235113, cost 1.2025063610356648e-06 iteration 999
m 1.4000570951172413, b 2.6567164290444785, cost 1.2023455183917236e-06 iteration 999
m 1.4000570912987012, b 2.656716648650757, cost 1.2021846972681977e-06 iteration 9999
m 1.4000570874804172, b 2.6567168682423485, cost 1.2020238976429305e-06 iteration 999
m 1.4000570836623878, b 2.6567170878192536, cost 1.2018631195411683e-06 iteration 999
m 1.4000570798446146, b 2.656717307381473, cost 1.201702362927775e-06 iteration 99994
m 1.400057076027096, b 2.6567175269290084, cost 1.2015416278268073e-06 iteration 9999
m 1.4000570722098329, b 2.6567177464618603, cost 1.2013809142238556e-06 iteration 999
m 1.4000570683928255, b 2.6567179659800297, cost 1.2012202221188899e-06 iteration 999
m 1.4000570645760728, b 2.6567181854835176, cost 1.2010595515055772e-06 iteration 999
m 1.4000570607595761, b 2.656718404972325, cost 1.200898902364932e-06 iteration 99999
Predicted values : [111.86116914  50.25865847  96.46054148  51.65871553 102.06076972
  64.25922908  78.25979969  50.25865847  37.65814492  99.2606556 ]
```

Start coding or generate with AI.