# part1

import math

def my\_sqrt(a):

x = a

while True:

y=(x + a/x) / 2.0

if y == x:

break

x = y

return x

# part 2

def test\_sqrt():

a = 1

while a < 26:

mynum = my\_sqrt(a)

othernum = math.sqrt(a)

print ("a=",a, " | my\_sqrt(a) =", mynum, "| math.sqrt(a)=", othernum, " | diff = ", abs(mynum-othernum))

a = a+ 1

test\_sqrt()

output

a= 1 | my\_sqrt(a) = 1 | math.sqrt(a)= 1.0 | diff = 0.0

a= 2 | my\_sqrt(a) = 1.414213562373095 | math.sqrt(a)= 1.4142135623730951 | diff = 2.220446049250313e-16

a= 3 | my\_sqrt(a) = 1.7320508075688772 | math.sqrt(a)= 1.7320508075688772 | diff = 0.0

a= 4 | my\_sqrt(a) = 2.0 | math.sqrt(a)= 2.0 | diff = 0.0

a= 5 | my\_sqrt(a) = 2.23606797749979 | math.sqrt(a)= 2.23606797749979 | diff = 0.0

a= 6 | my\_sqrt(a) = 2.449489742783178 | math.sqrt(a)= 2.449489742783178 | diff = 0.0

a= 7 | my\_sqrt(a) = 2.6457513110645907 | math.sqrt(a)= 2.6457513110645907 | diff = 0.0

a= 8 | my\_sqrt(a) = 2.82842712474619 | math.sqrt(a)= 2.8284271247461903 | diff = 4.440892098500626e-16

a= 9 | my\_sqrt(a) = 3.0 | math.sqrt(a)= 3.0 | diff = 0.0

a= 10 | my\_sqrt(a) = 3.162277660168379 | math.sqrt(a)= 3.1622776601683795 | diff = 4.440892098500626e-16

a= 11 | my\_sqrt(a) = 3.3166247903554 | math.sqrt(a)= 3.3166247903554 | diff = 0.0

a= 12 | my\_sqrt(a) = 3.4641016151377544 | math.sqrt(a)= 3.4641016151377544 | diff = 0.0

a= 13 | my\_sqrt(a) = 3.6055512754639896 | math.sqrt(a)= 3.605551275463989 | diff = 4.440892098500626e-16

a= 14 | my\_sqrt(a) = 3.7416573867739413 | math.sqrt(a)= 3.7416573867739413 | diff = 0.0

a= 15 | my\_sqrt(a) = 3.872983346207417 | math.sqrt(a)= 3.872983346207417 | diff = 0.0

a= 16 | my\_sqrt(a) = 4.0 | math.sqrt(a)= 4.0 | diff = 0.0

a= 17 | my\_sqrt(a) = 4.123105625617661 | math.sqrt(a)= 4.123105625617661 | diff = 0.0

a= 18 | my\_sqrt(a) = 4.242640687119286 | math.sqrt(a)= 4.242640687119285 | diff = 8.881784197001252e-16

a= 19 | my\_sqrt(a) = 4.358898943540673 | math.sqrt(a)= 4.358898943540674 | diff = 8.881784197001252e-16

a= 20 | my\_sqrt(a) = 4.47213595499958 | math.sqrt(a)= 4.47213595499958 | diff = 0.0

a= 21 | my\_sqrt(a) = 4.58257569495584 | math.sqrt(a)= 4.58257569495584 | diff = 0.0

a= 22 | my\_sqrt(a) = 4.69041575982343 | math.sqrt(a)= 4.69041575982343 | diff = 0.0

a= 23 | my\_sqrt(a) = 4.795831523312719 | math.sqrt(a)= 4.795831523312719 | diff = 0.0

a= 24 | my\_sqrt(a) = 4.898979485566356 | math.sqrt(a)= 4.898979485566356 | diff = 0.0

a= 25 | my\_sqrt(a) = 5.0 | math.sqrt(a)= 5.0 | diff = 0.0