

An Elementary Python Program to Calculate the Area Under a Curve

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Abstract

This a very simple program to calculate the area under a curve to illustrate the Riemann Sum in Calculus. Feel free to modify it in any way you want.

```
# Calculate the area under a curve
#
# Example Function y = x^2
#
# This program integrates the function from x1 to x2
# x2 must be greater than x1, otherwise the program will print an error message.
#
x1 = float(input('x1='))
x2 = float (input('x2='))

if x1 > x2:
    print('The calculated area will be negative')

# Compute delta_x for the integration interval
#
delta_x = ((x2-x1)/1000)
j = abs ((x2-x1)/delta_x)
i = int (j)
print('i =', i)
# initialize
n=0
A= 0.0
x = x1
# Begin Numerical Integration
while n < i:
    delta_A = x**2 * delta_x
    x = x + delta_x
    A = A + delta_A
    n = n+1
print('Area Under the Curve =', A)
```