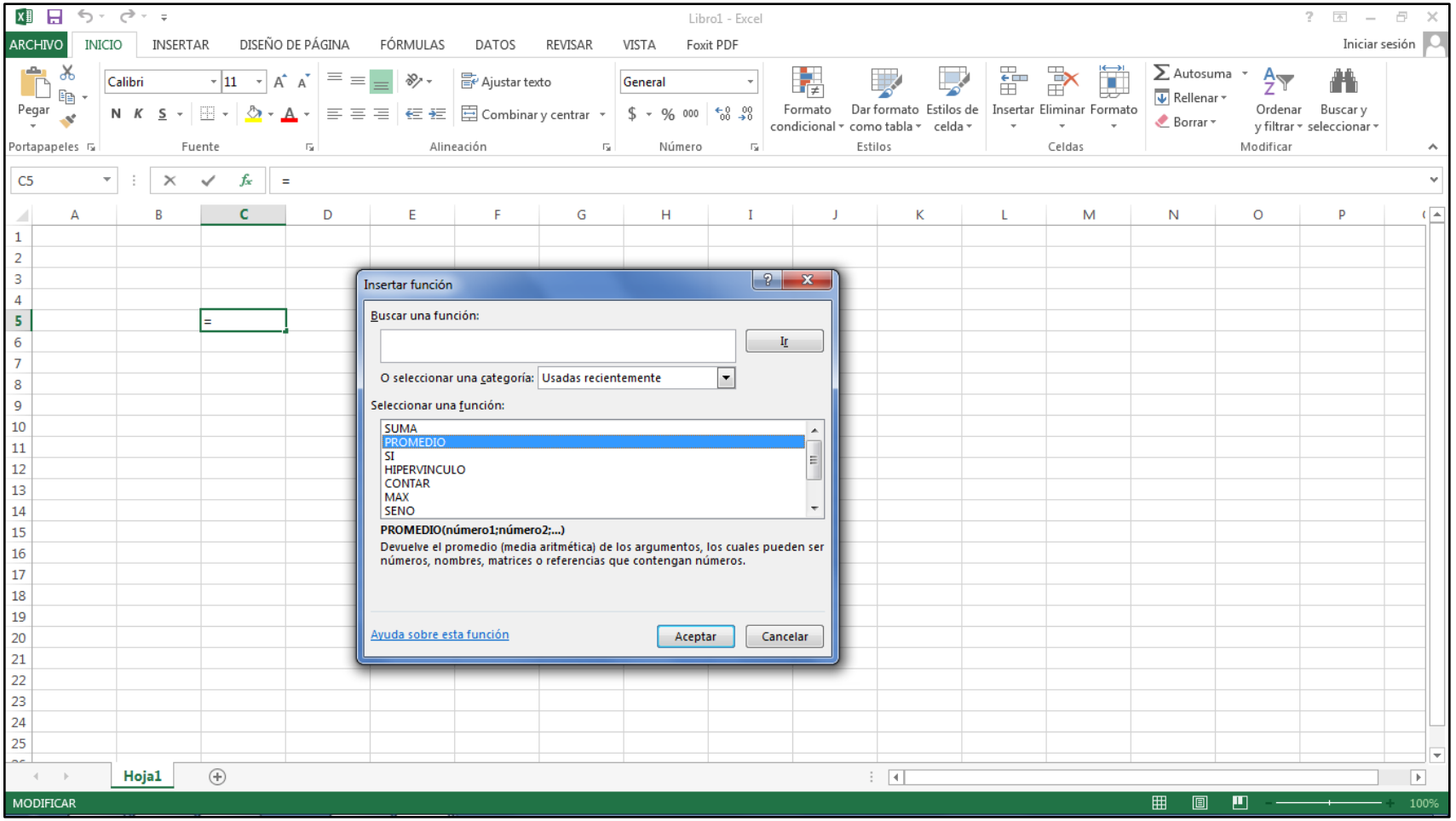
Algoritmia y Programación

Oscar Bedoya

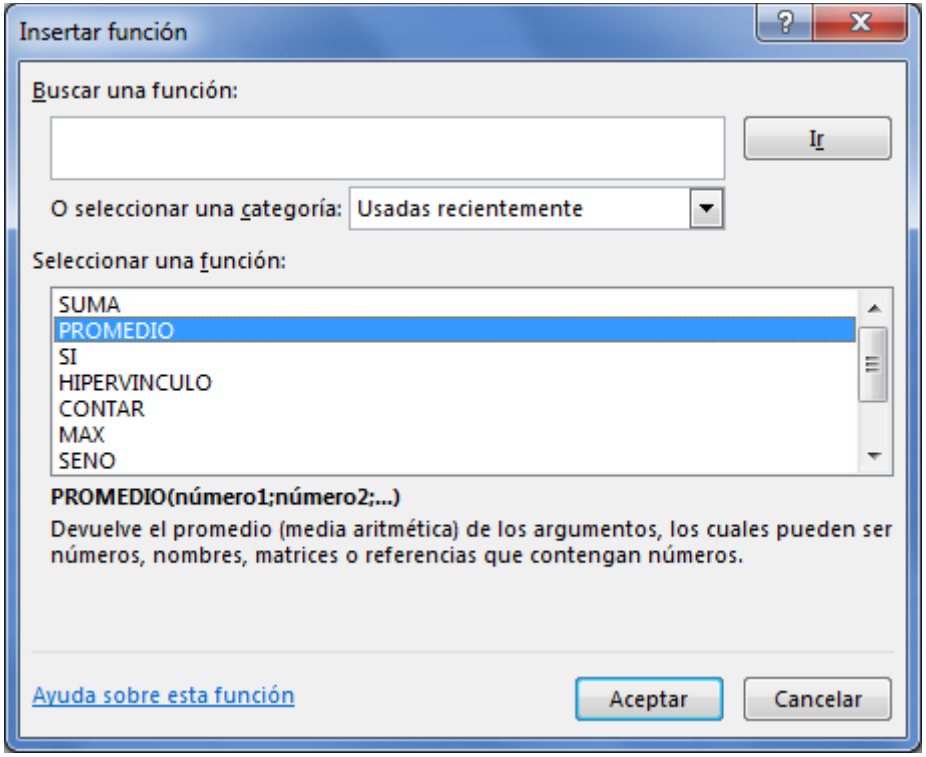
oscar.bedoya@correounivalle.edu.co

Funciones

Funciones en Python



Funciones en Python



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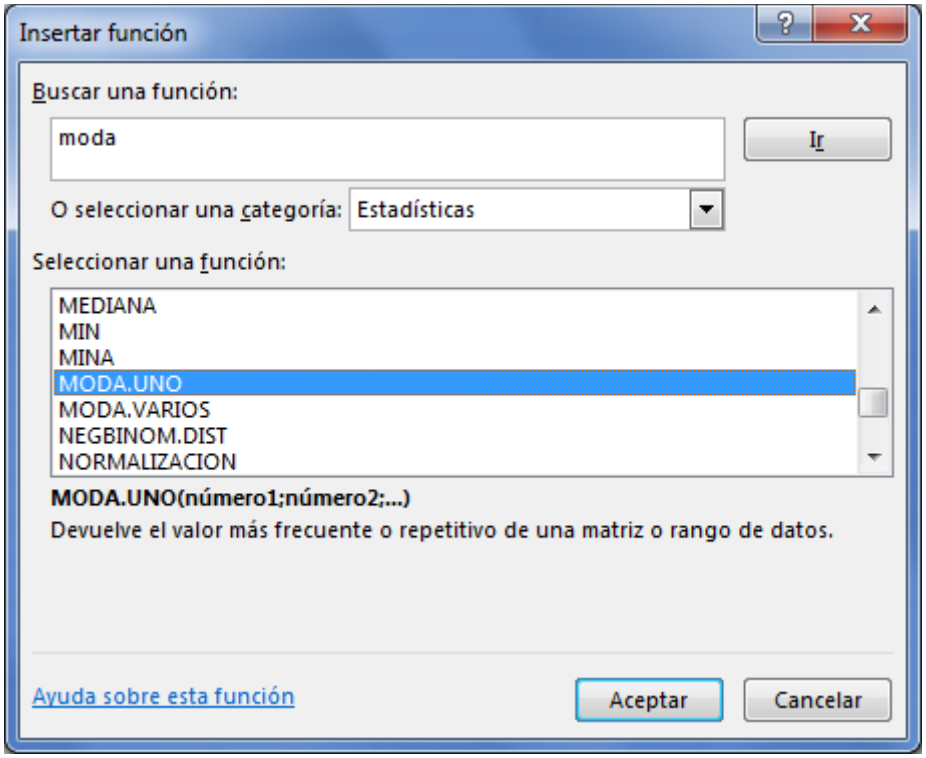
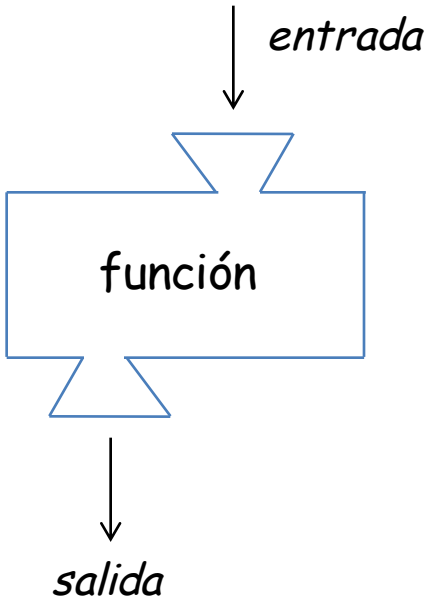


Funciones en Python

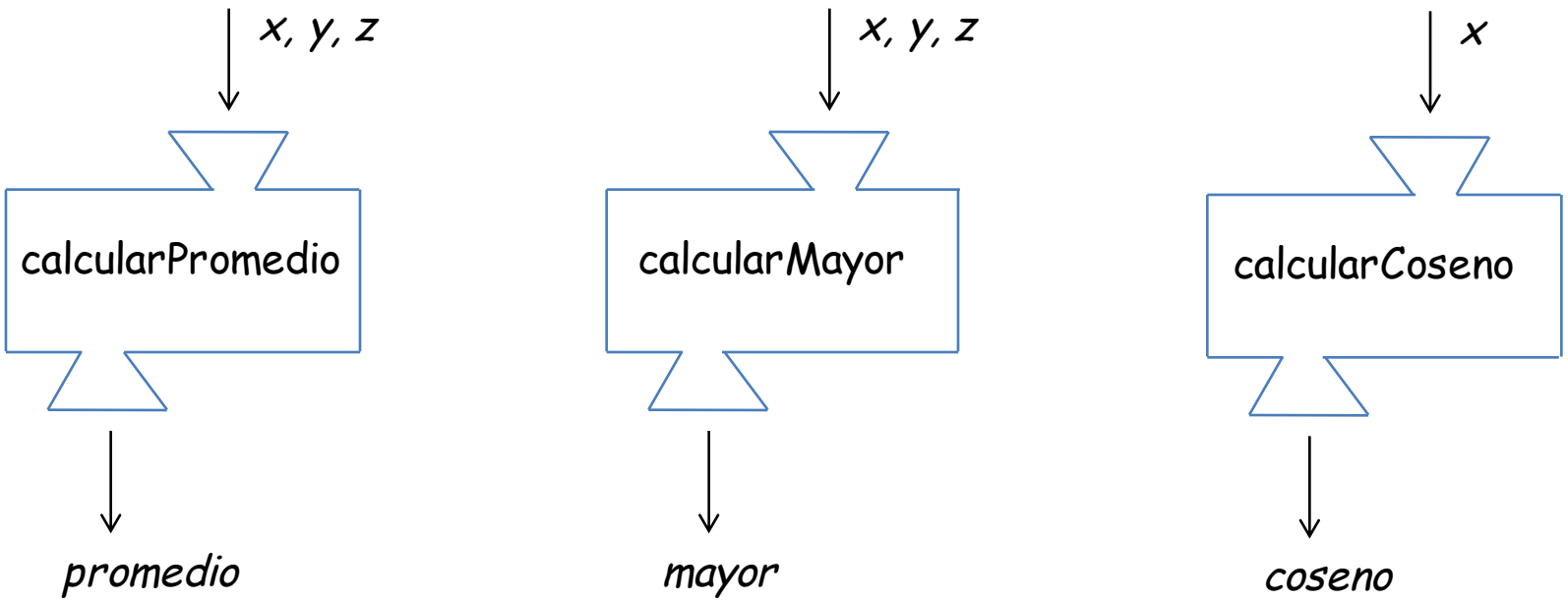
Función	Descripción
promedio(x,y,z)	Devuelve el promedio de tres valores
mayor(x,y,z)	Devuelve el mayor valor entre x, y, z
cos(x)	Devuelve el coseno del ángulo x
raíz(x)	Devuelve la raíz cuadrada de x

Funciones en Python

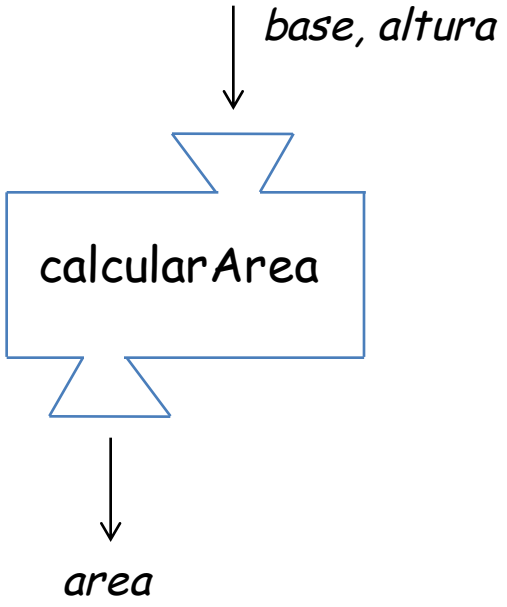


Una función en Python se **especializa** en realizar un cálculo determinado

Funciones en Python



Funciones en Python



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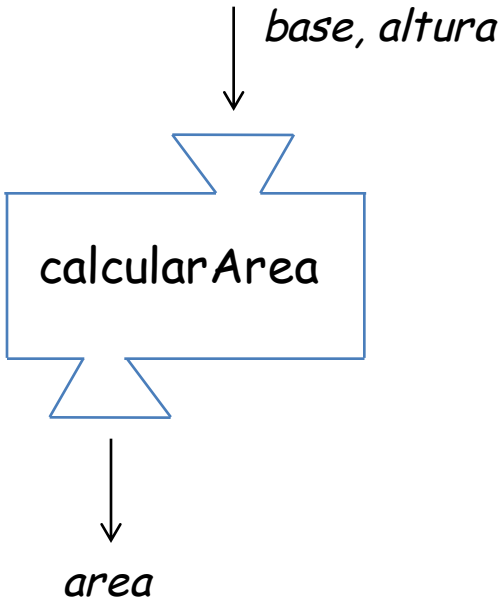
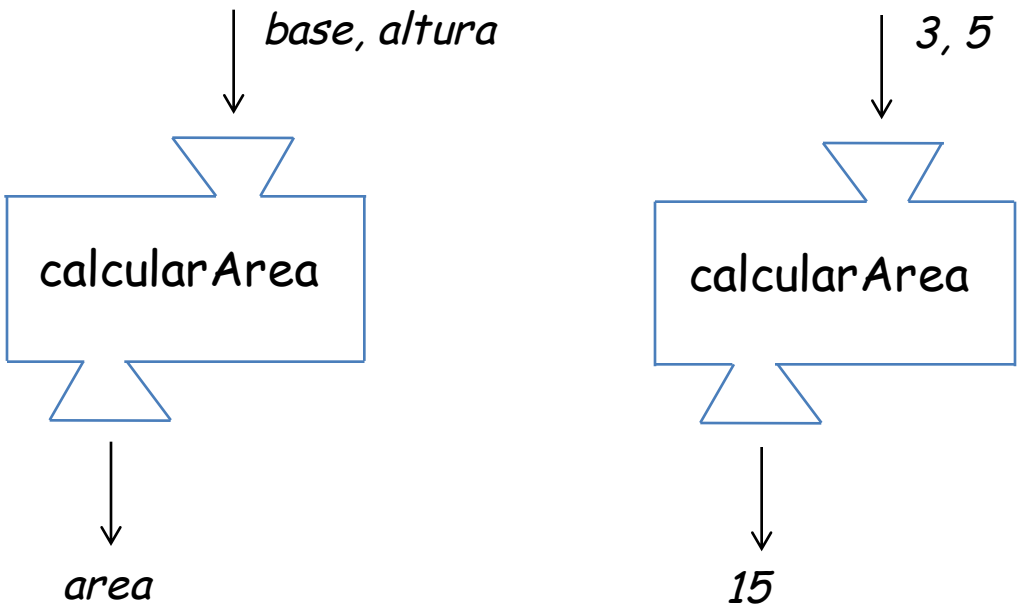
Funciones en Python



Funciones en Python



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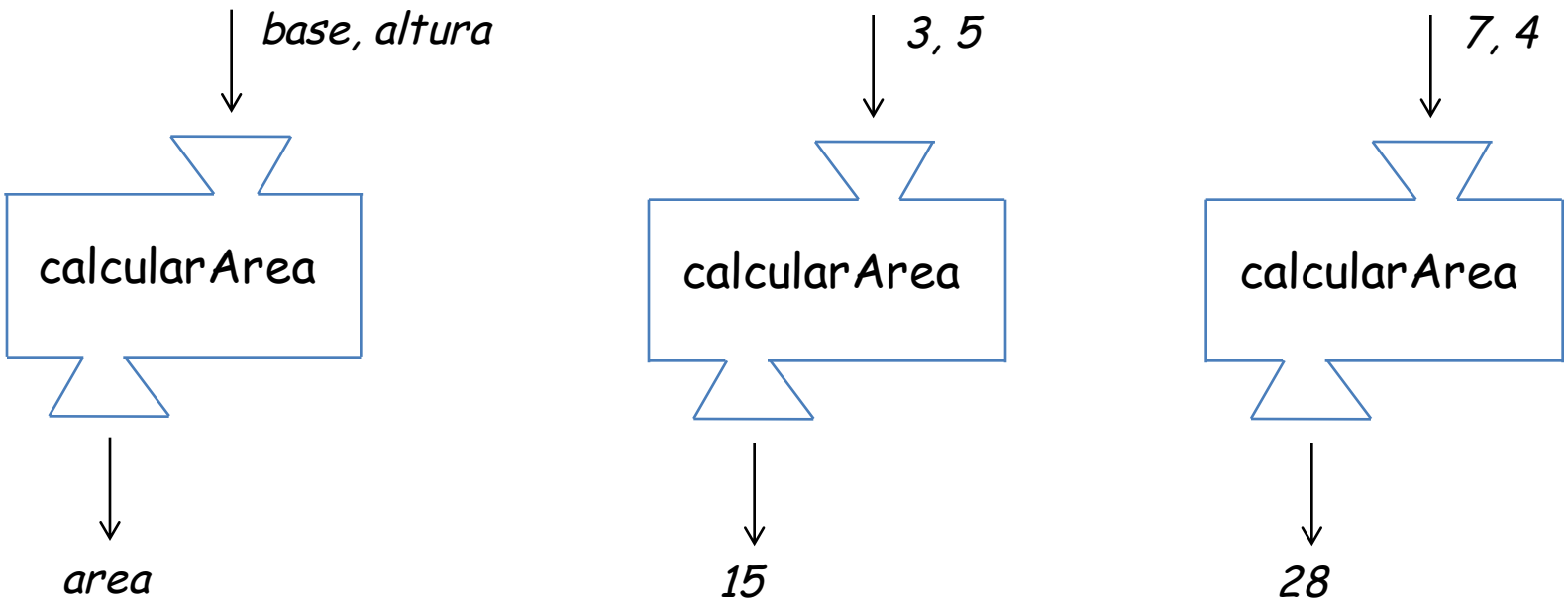
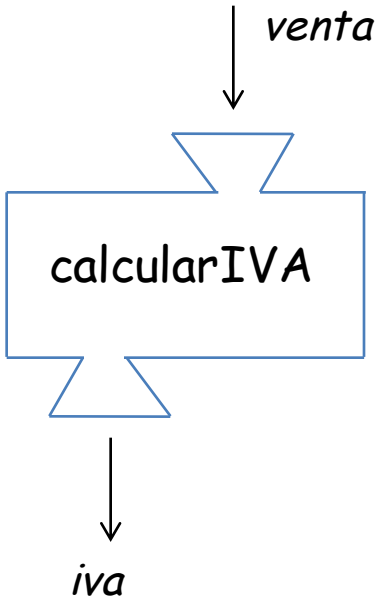


Funciones en Python



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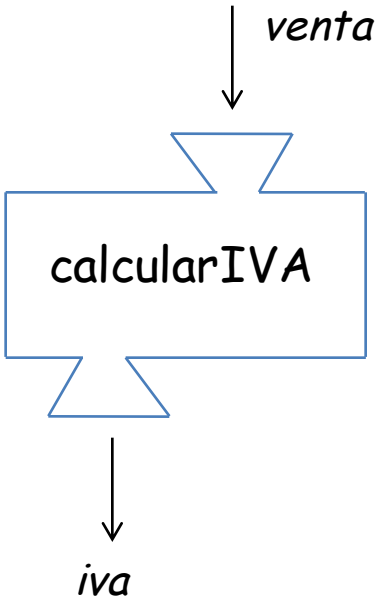

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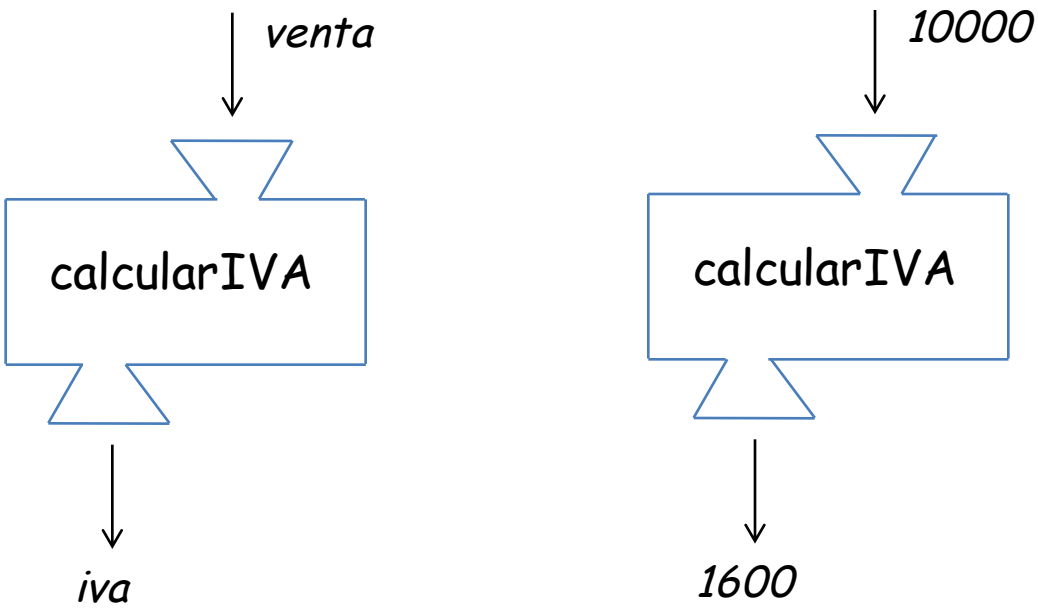

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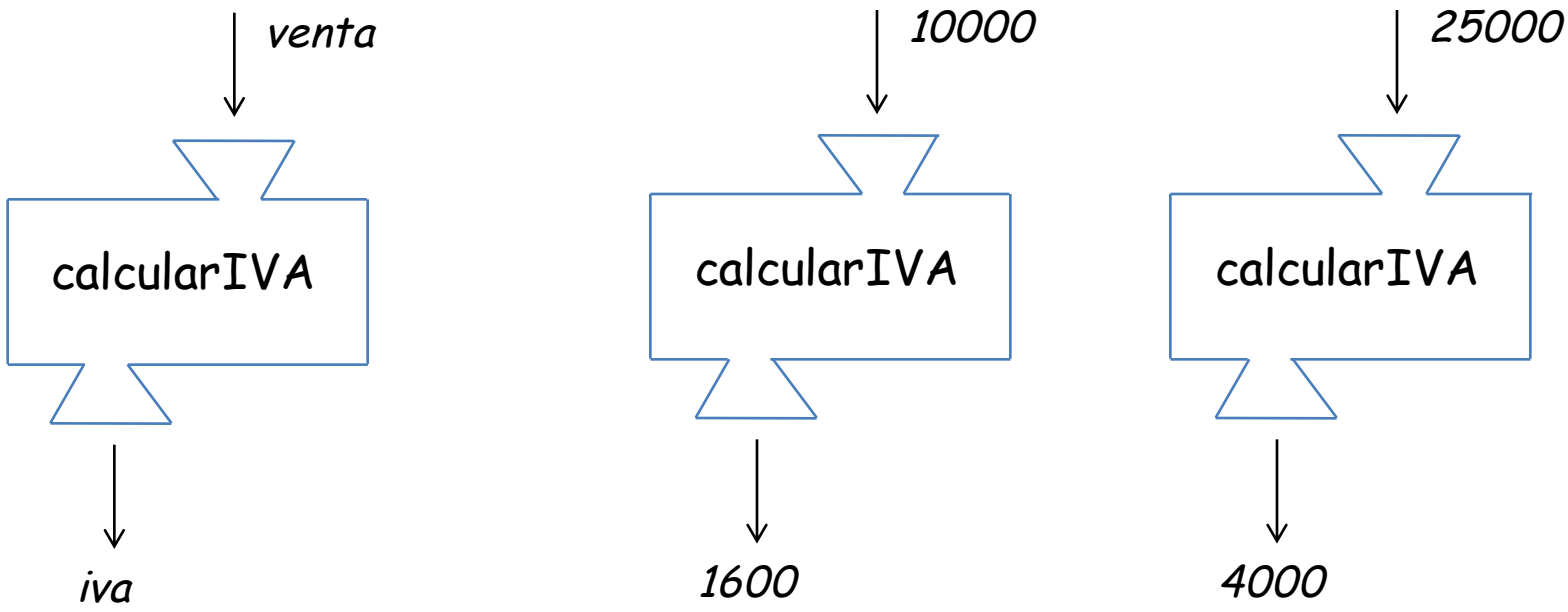

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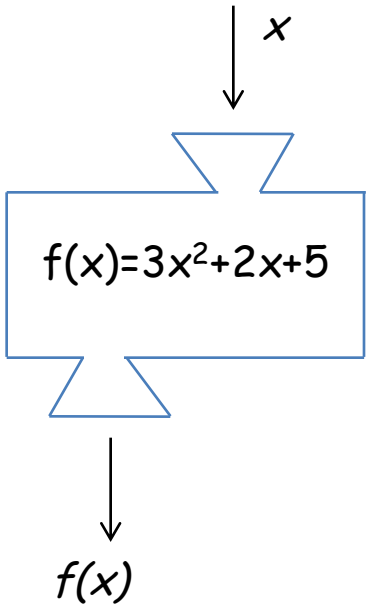
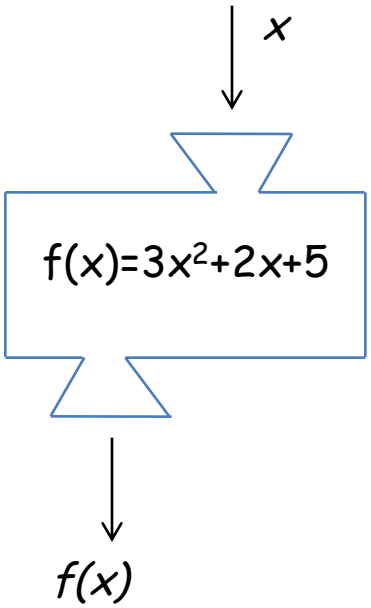
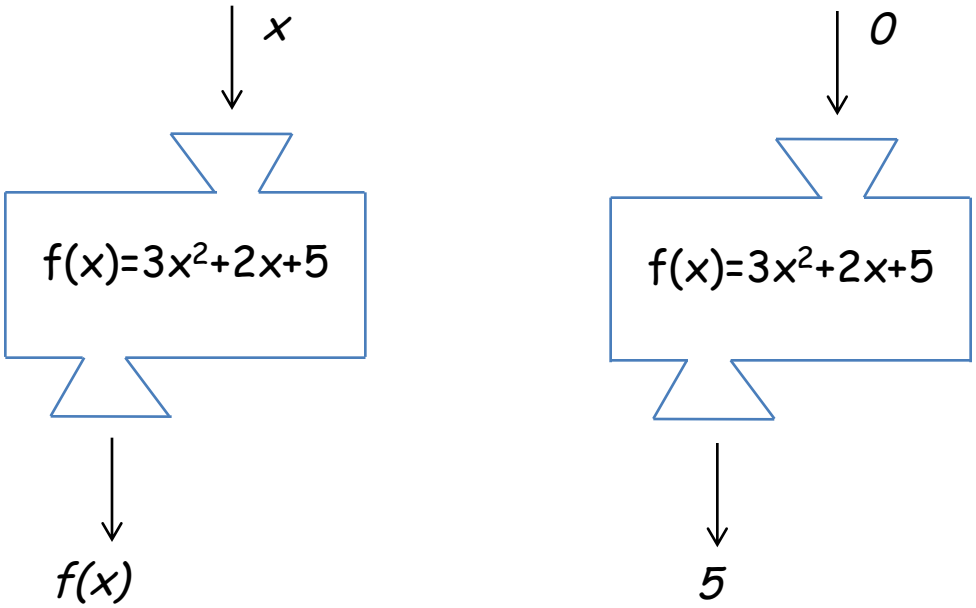


Una función en Python se **especializa** en realizar un cálculo determinado

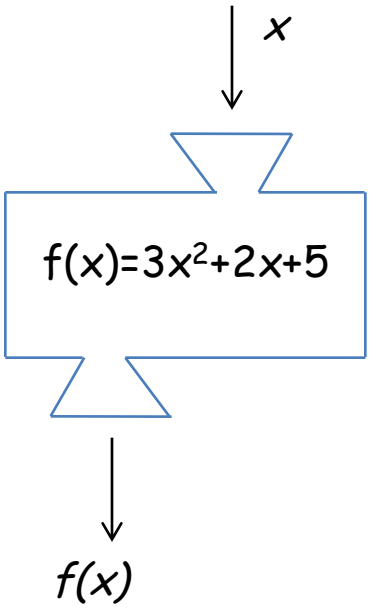
Funciones en Python

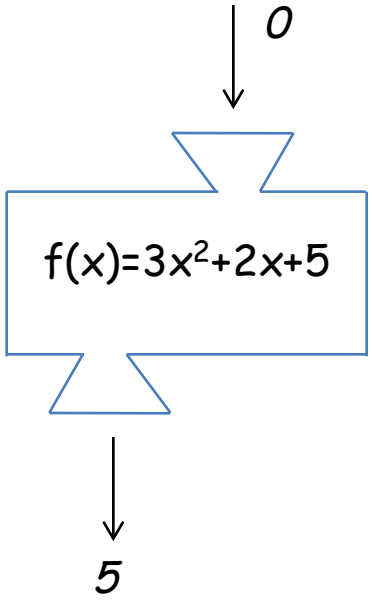


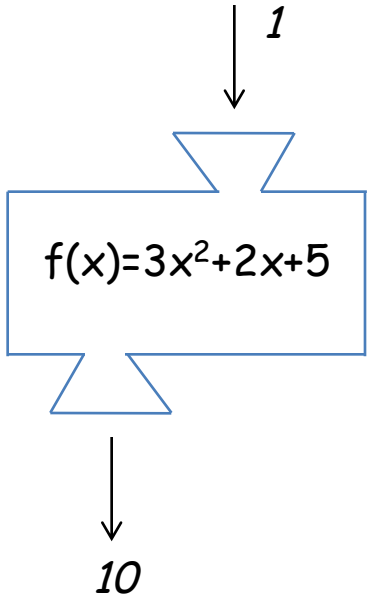
Funciones en Python

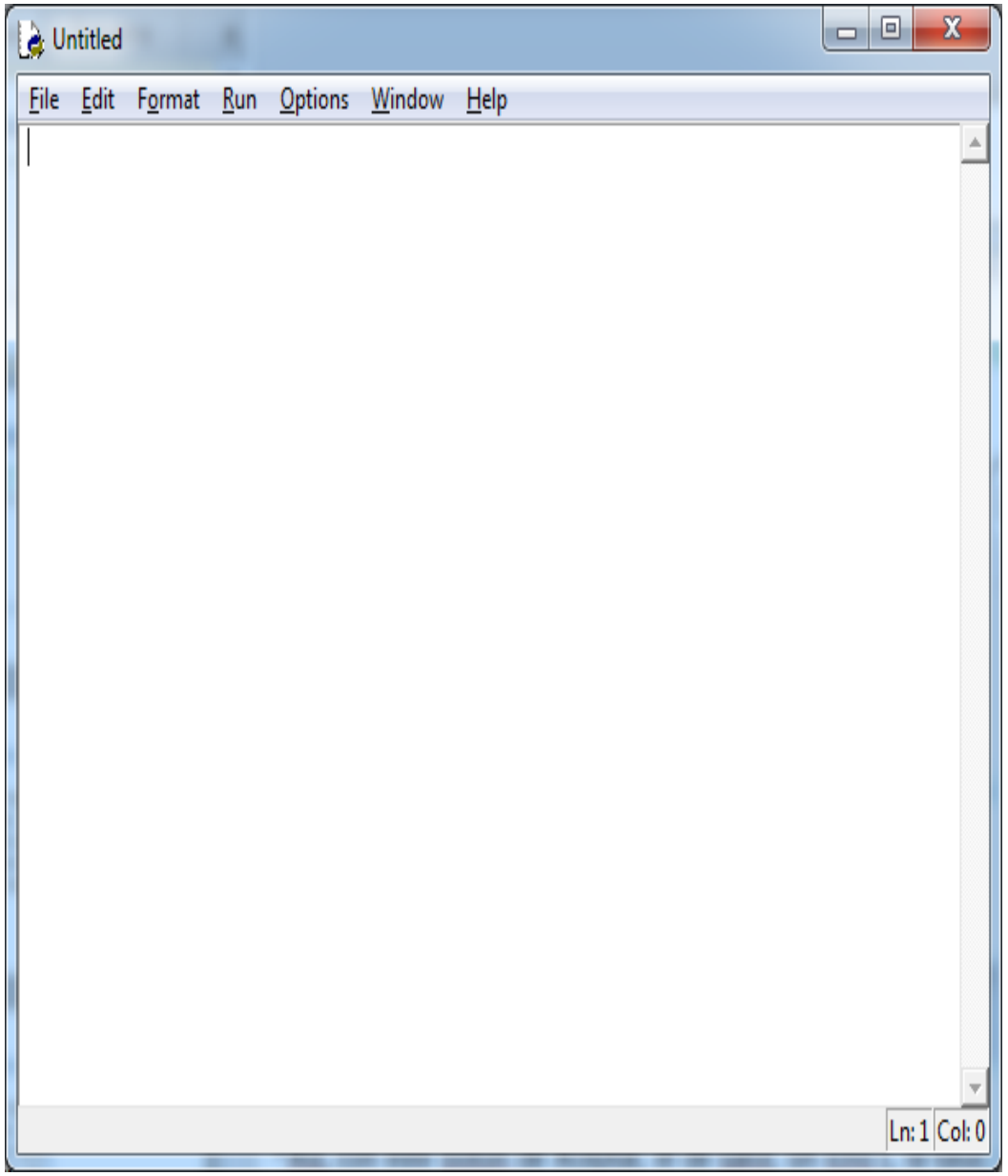


Funciones en Python





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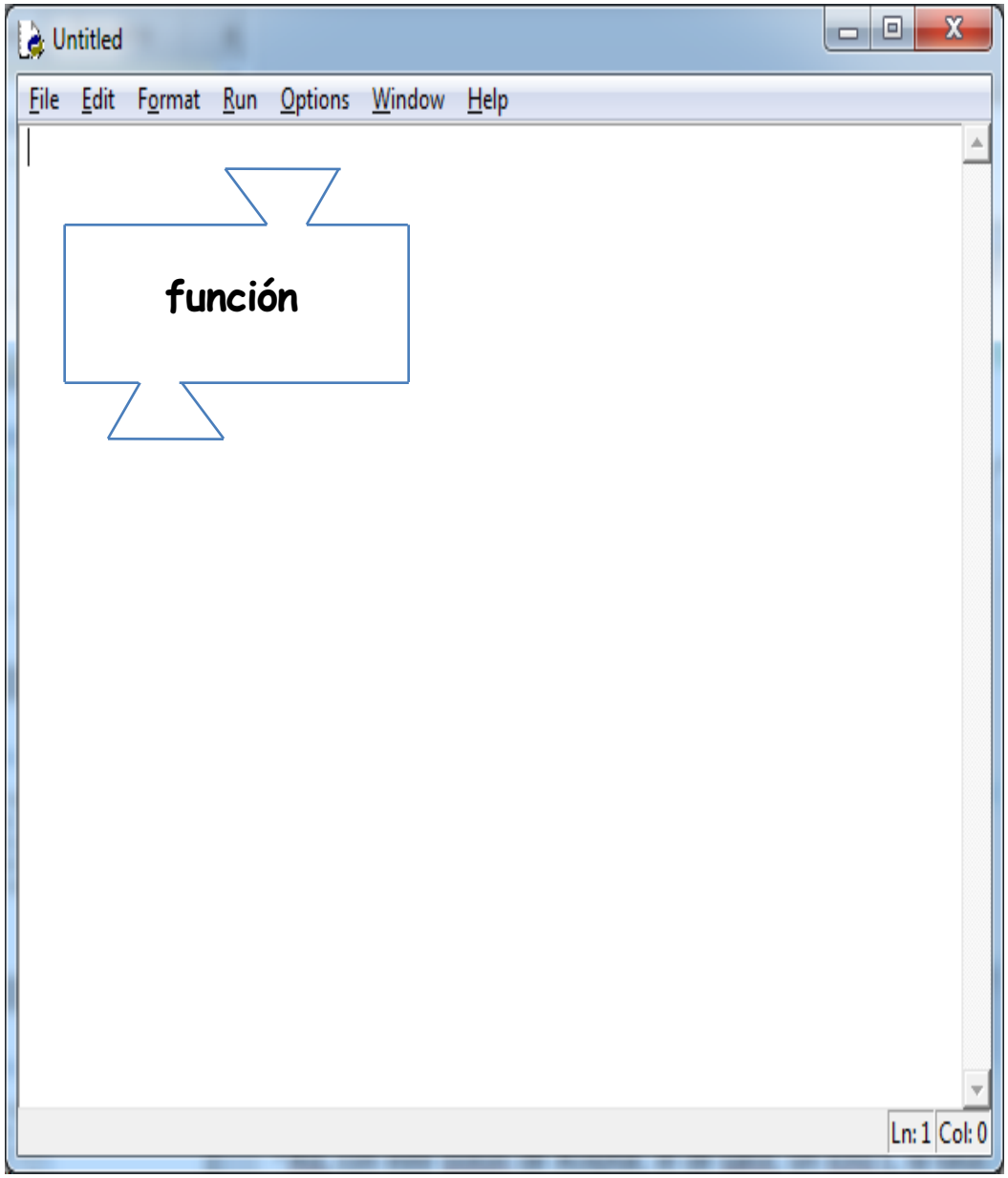
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función
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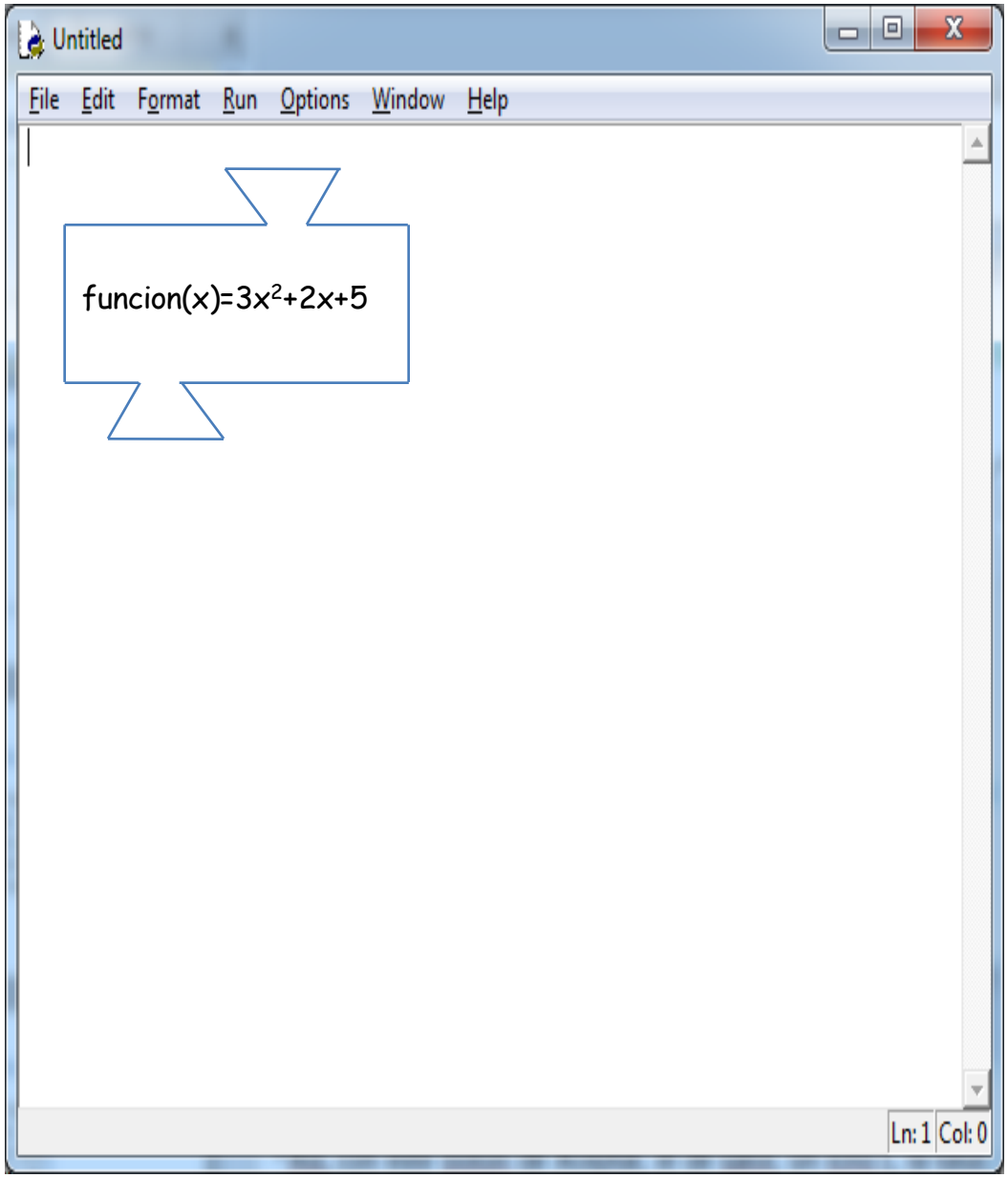
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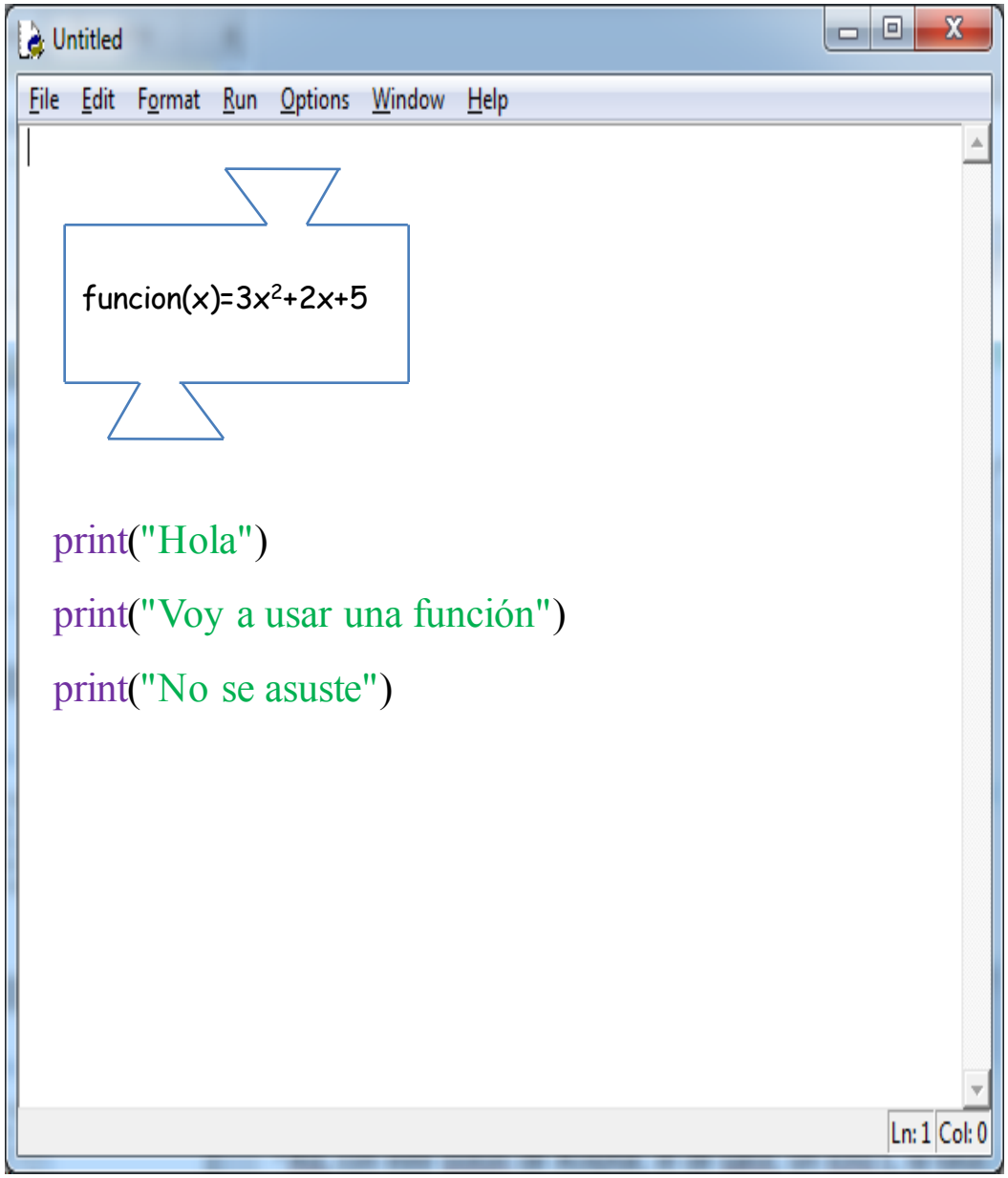
funcion(x)=3x2+2x+5
Ln: 1 Col: 0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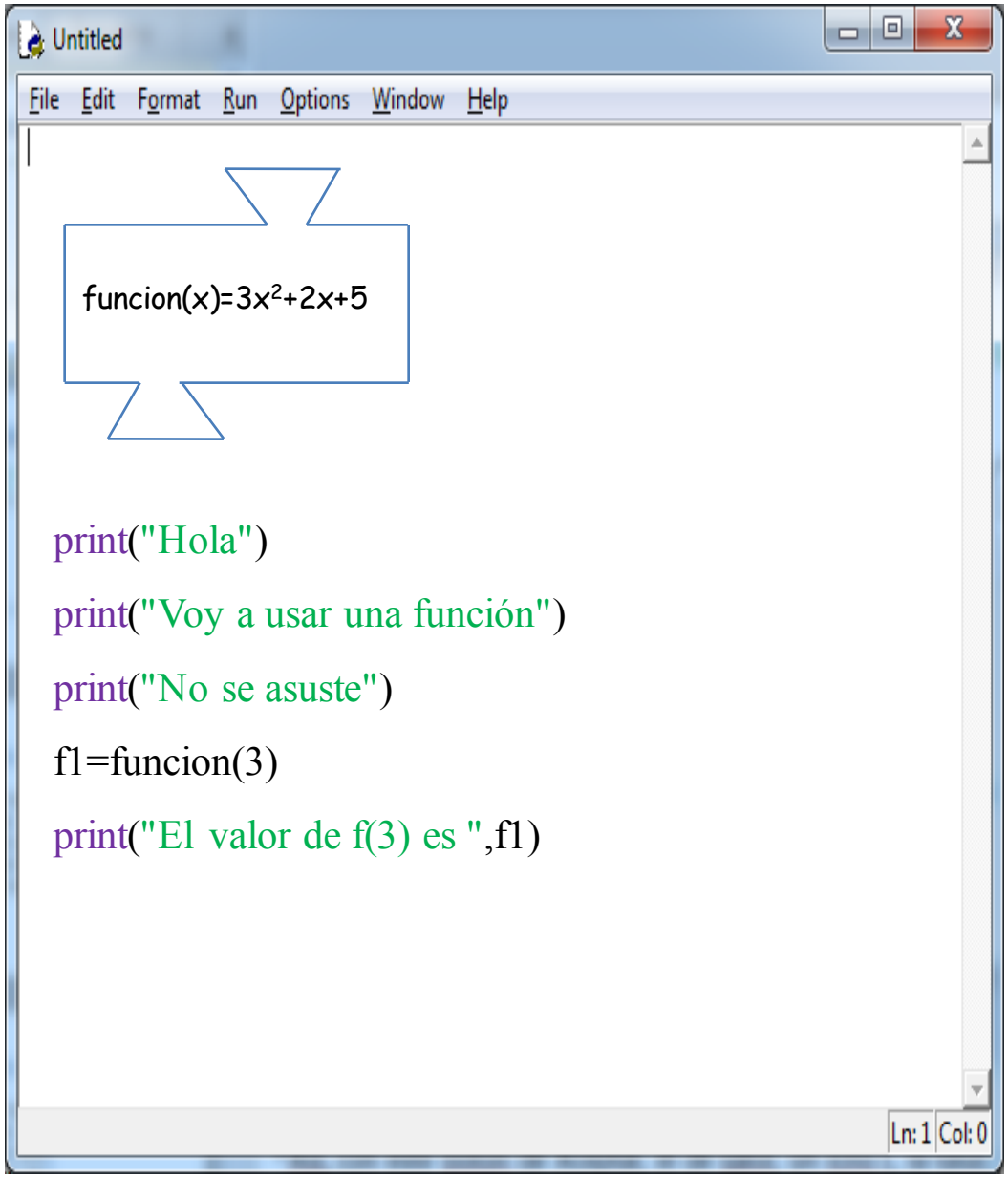
funcion(x)=3x²+2x+5
print("Hola")
print("Voy a usar una función")
print("No se asuste")
Ln: 1 Col: 0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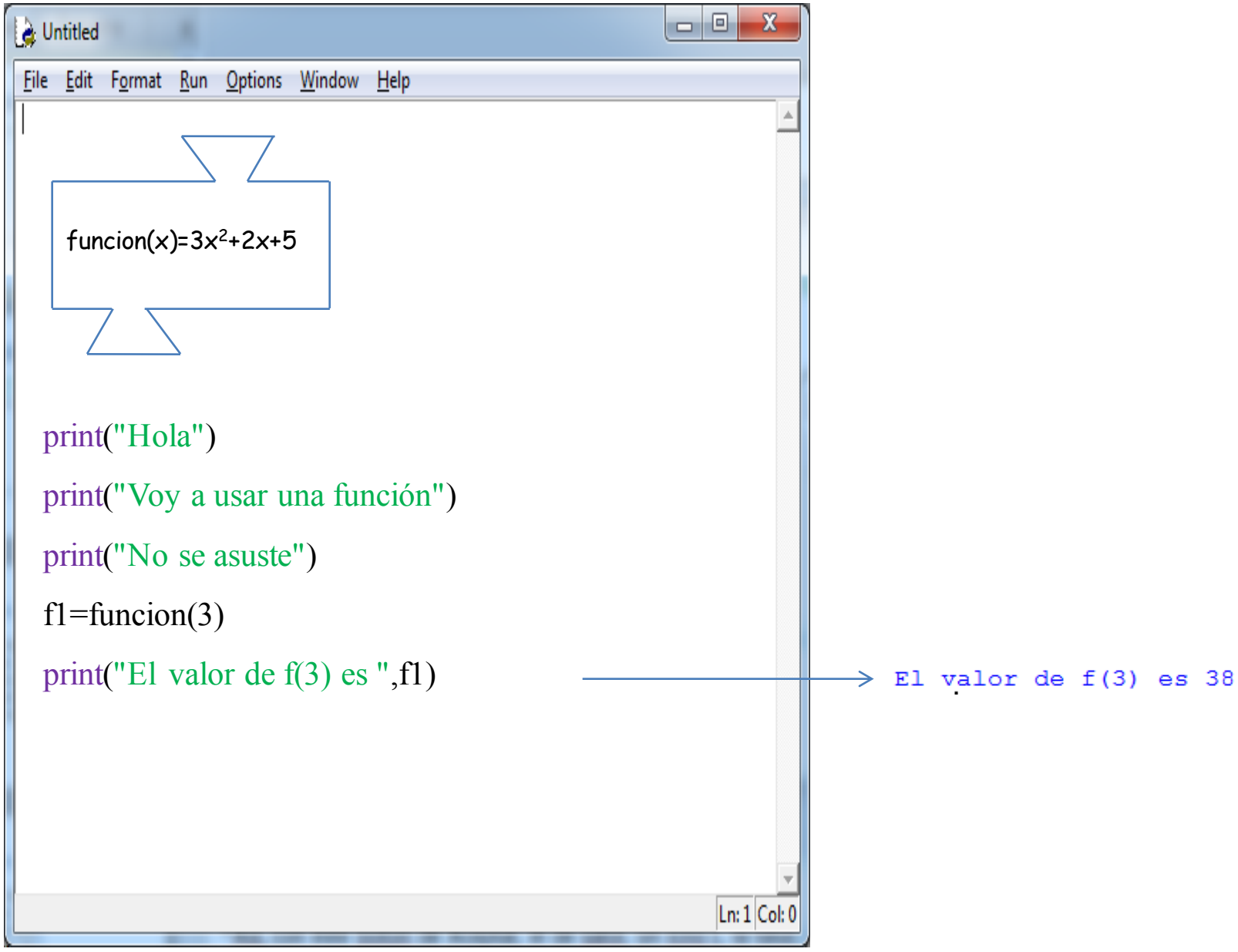
File Edit Format Run Options Window Help
funcion(x)=3x²+2x+5
print("Hola")
print("Voy a usar una función")
print("No se asuste")
f1=funcion(3)
print("El valor de f(3) es ",f1)
Ln: 1 Col: 0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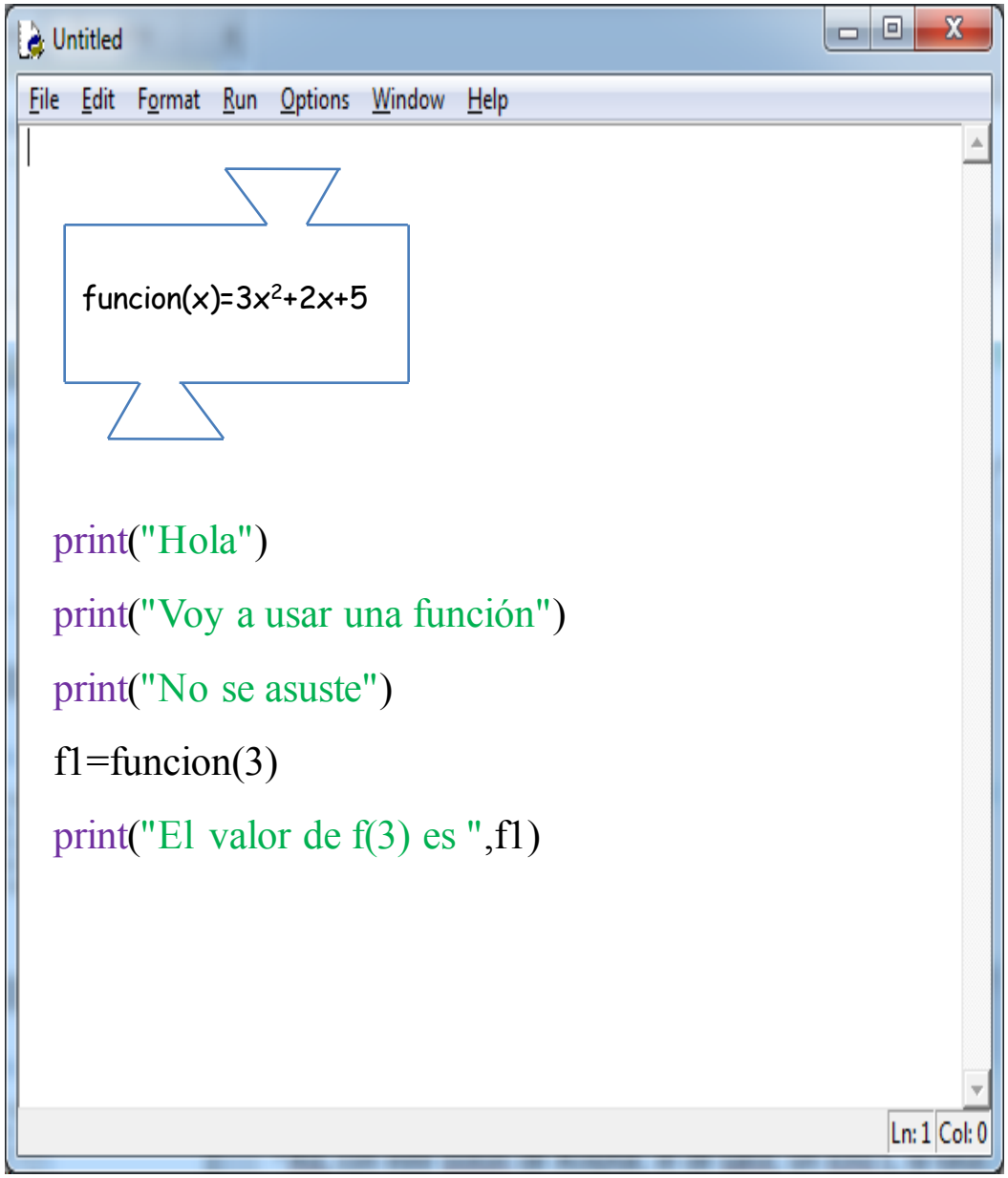
funcion(x)=3x²+2x+5
print("Hola")
print("Voy a usar una función")
print("No se asuste")
f1=funcion(3)
print("El valor de f(3) es ",f1)
El valor de f(3) es 38
Ln: 1 Col: 0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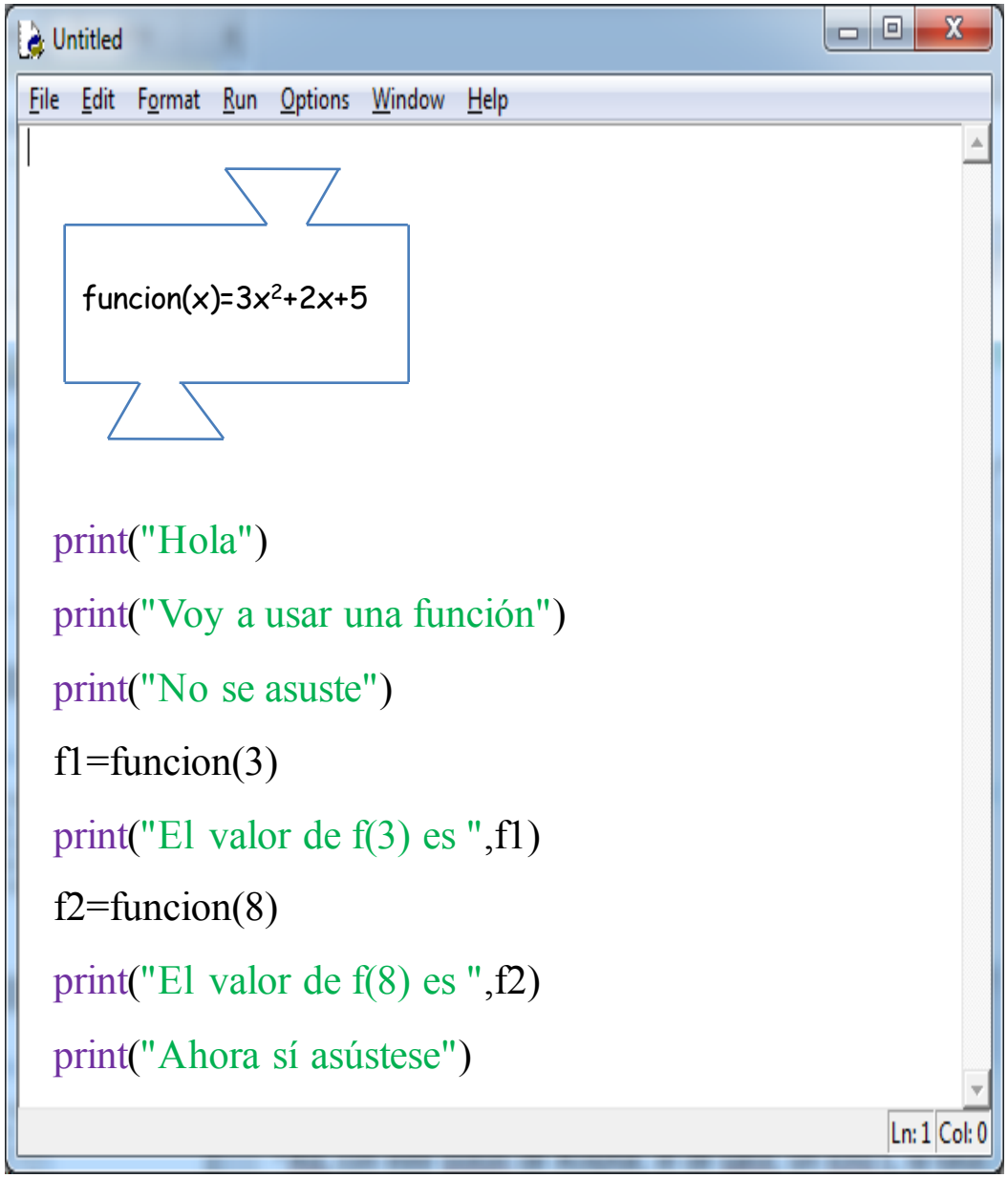
funcion(x)=3x²+2x+5
print("Hola")
print("Voy a usar una función")
print("No se asuste")
f1=funcion(3)
print("El valor de f(3) es ",f1)
Ln: 1 Col: 0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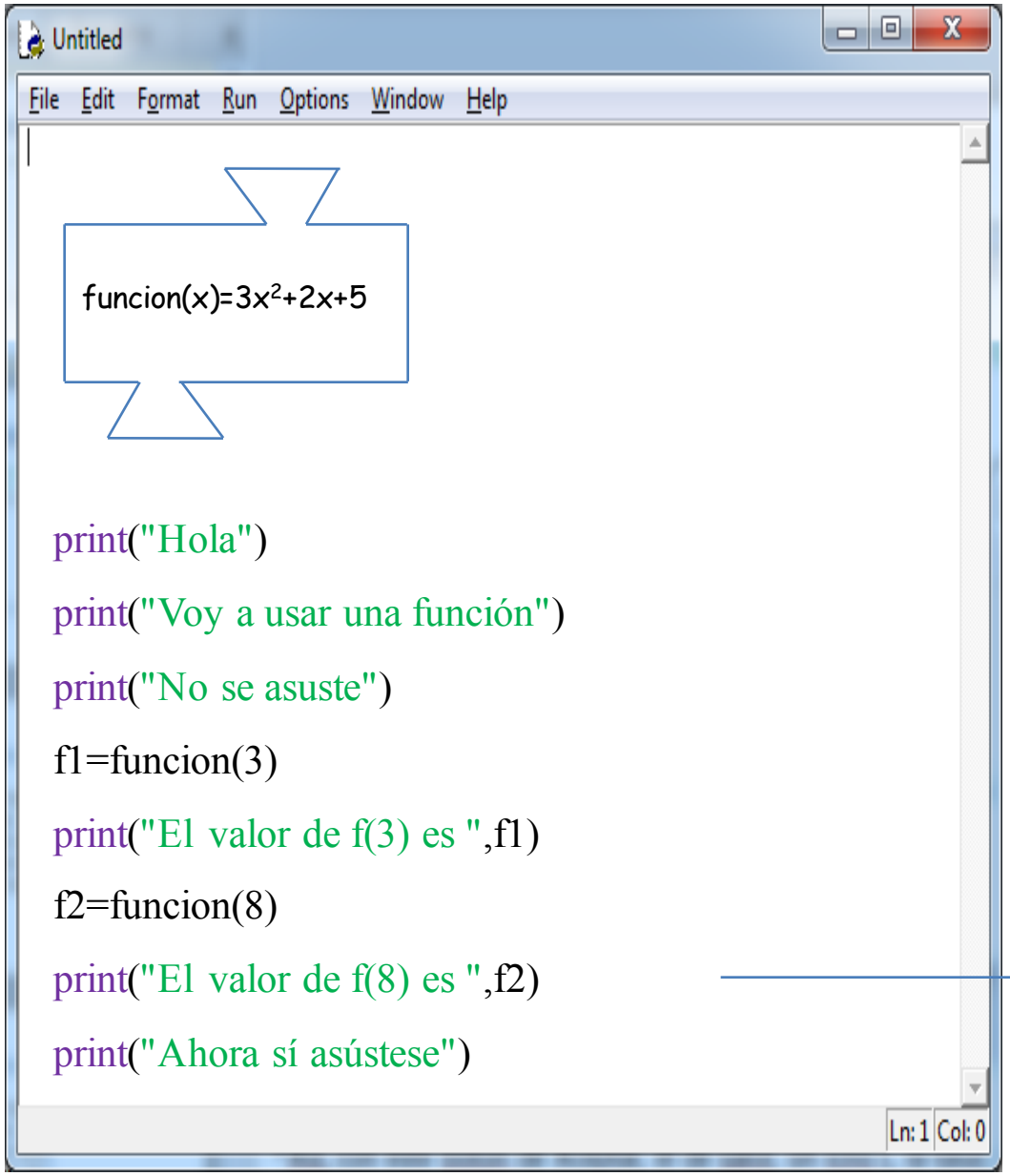
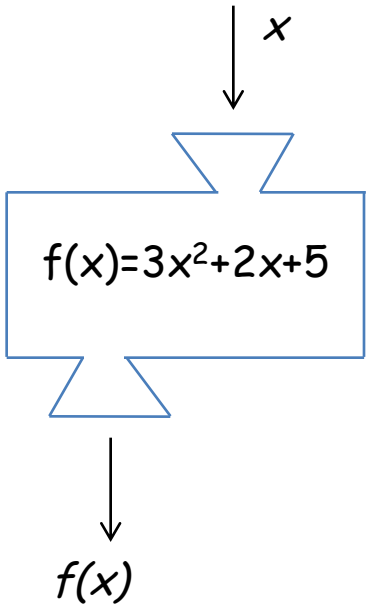
funcion(x)=3x²+2x+5
print("Hola")
print("Voy a usar una función")
print("No se asuste")
f1=funcion(3)
print("El valor de f(3) es ",f1)
f2=funcion(8)
print("El valor de f(8) es ",f2)
print("Ahora sí asústese")
Ln: 1 Col: 0




```
El valor de f(8) es 213
```

Funciones en Python



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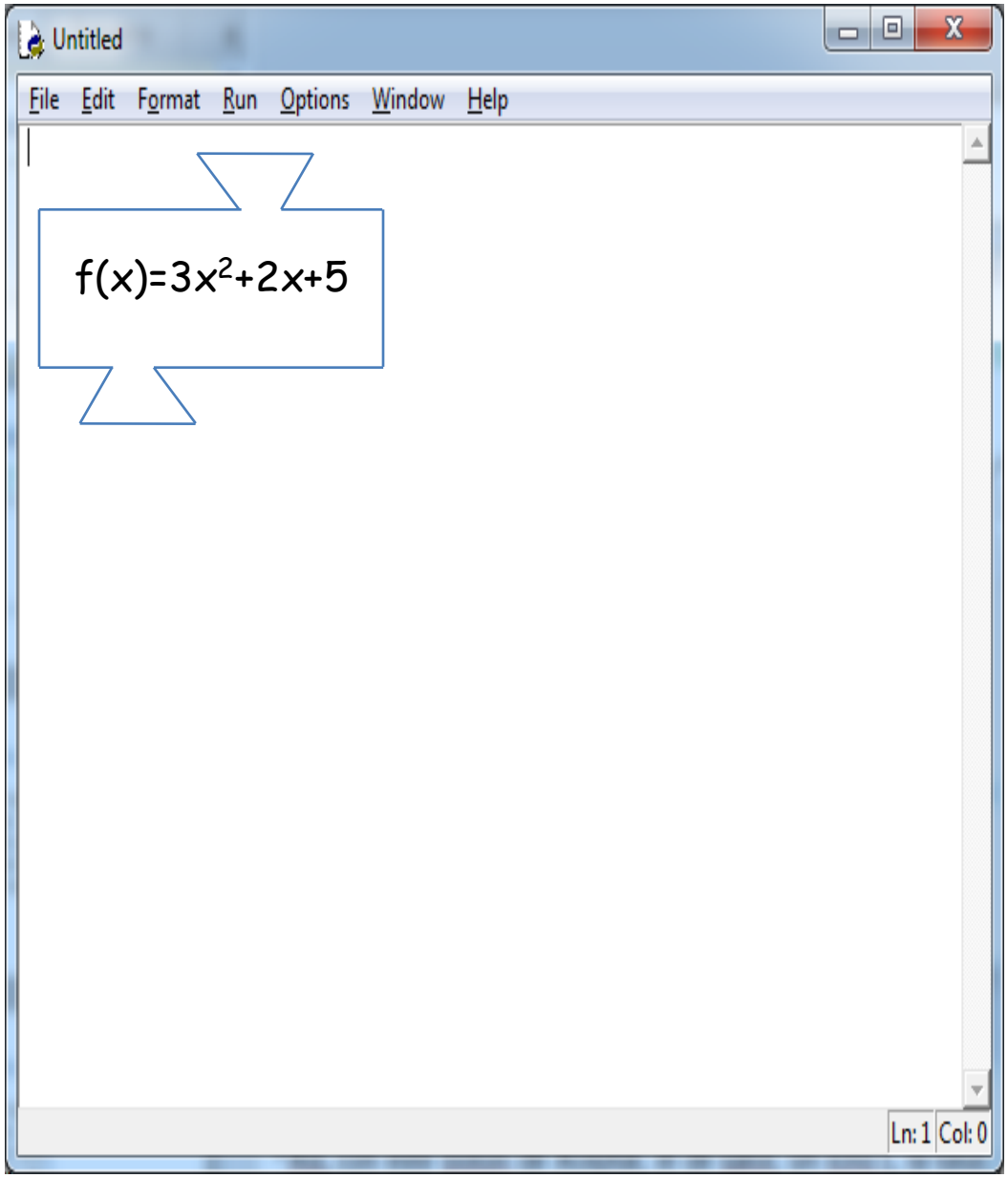
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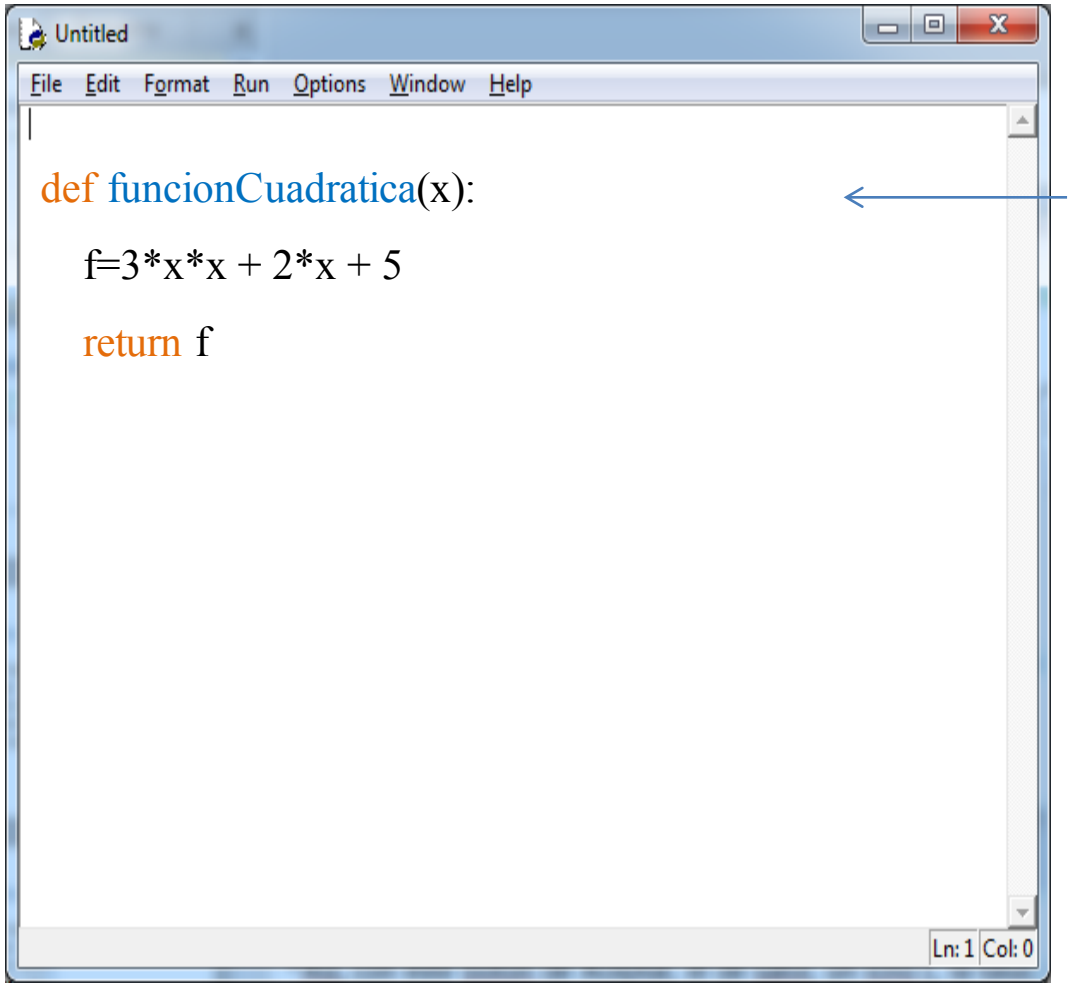
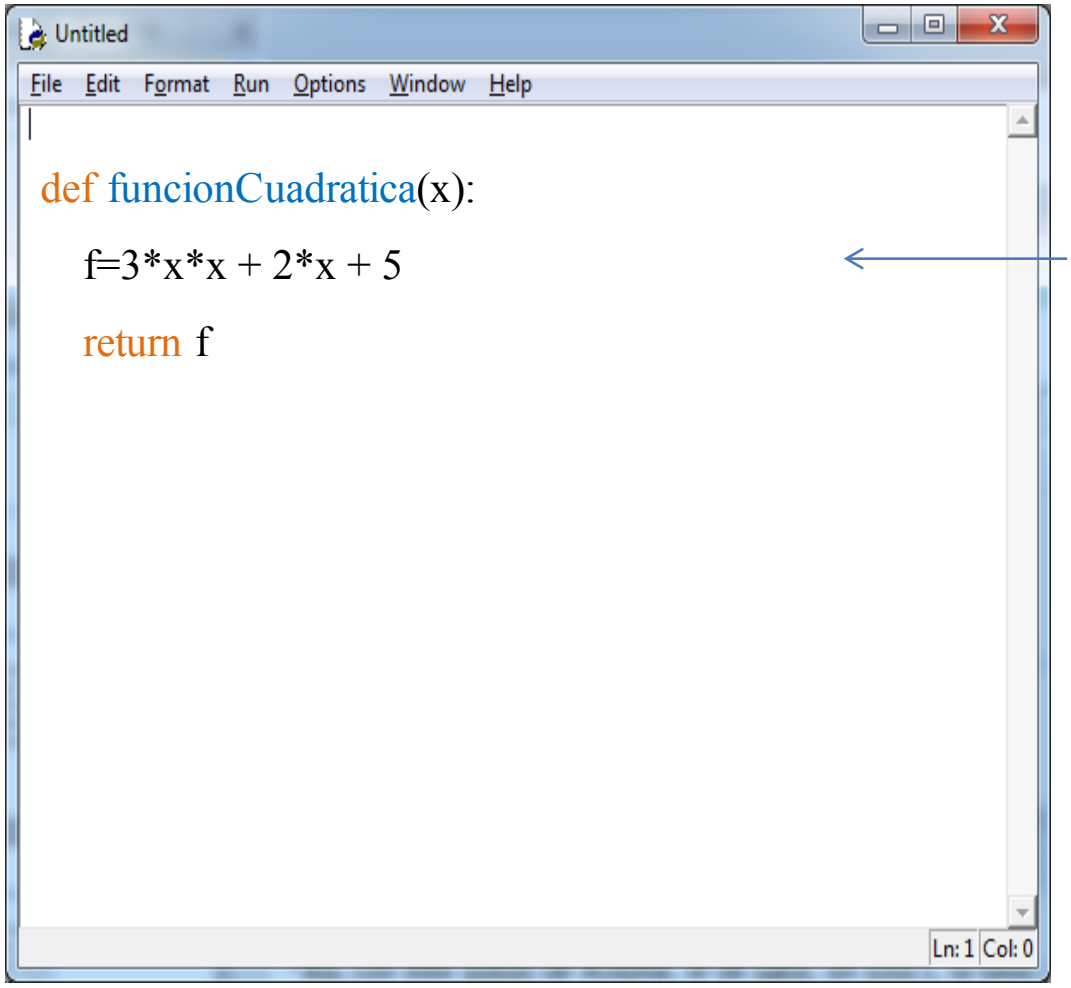
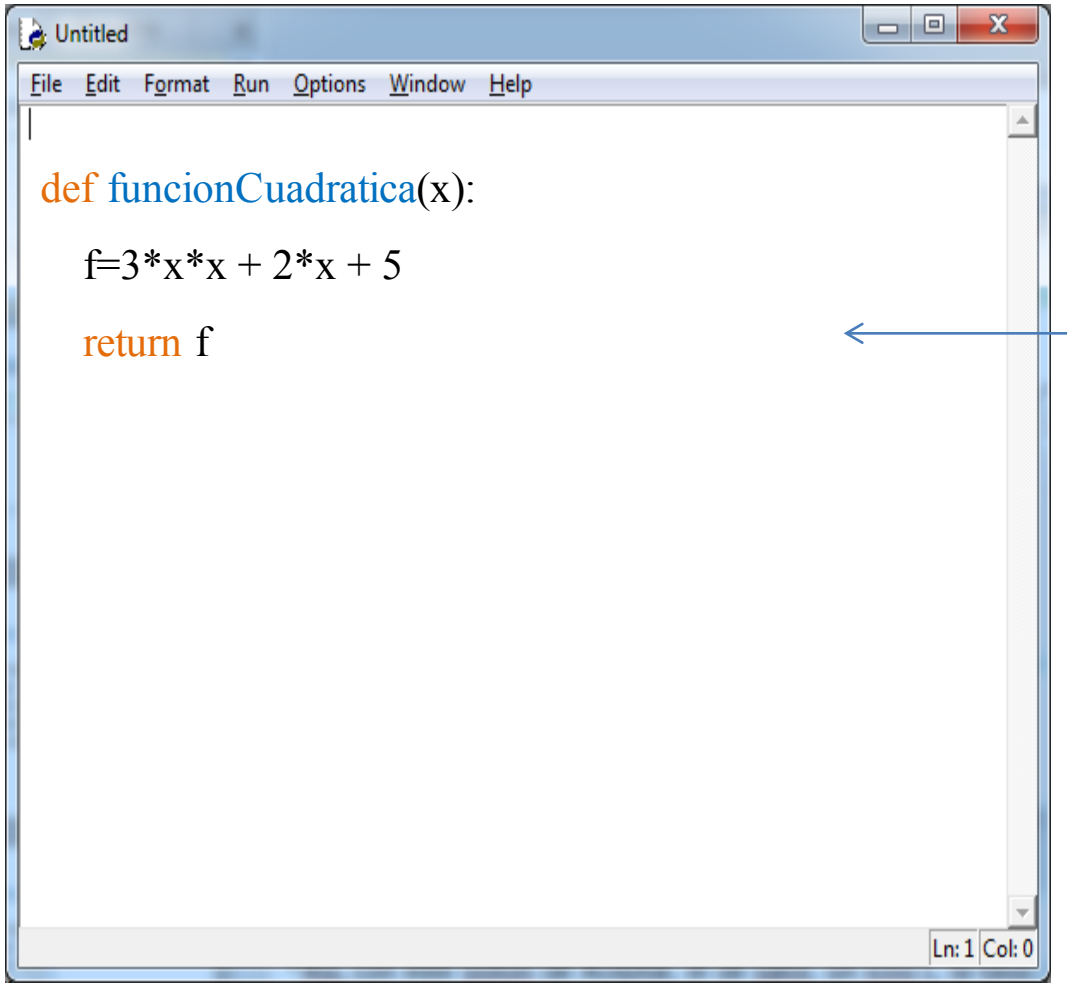
f(x)=3x2+2x+5
Ln: 1 Col: 0



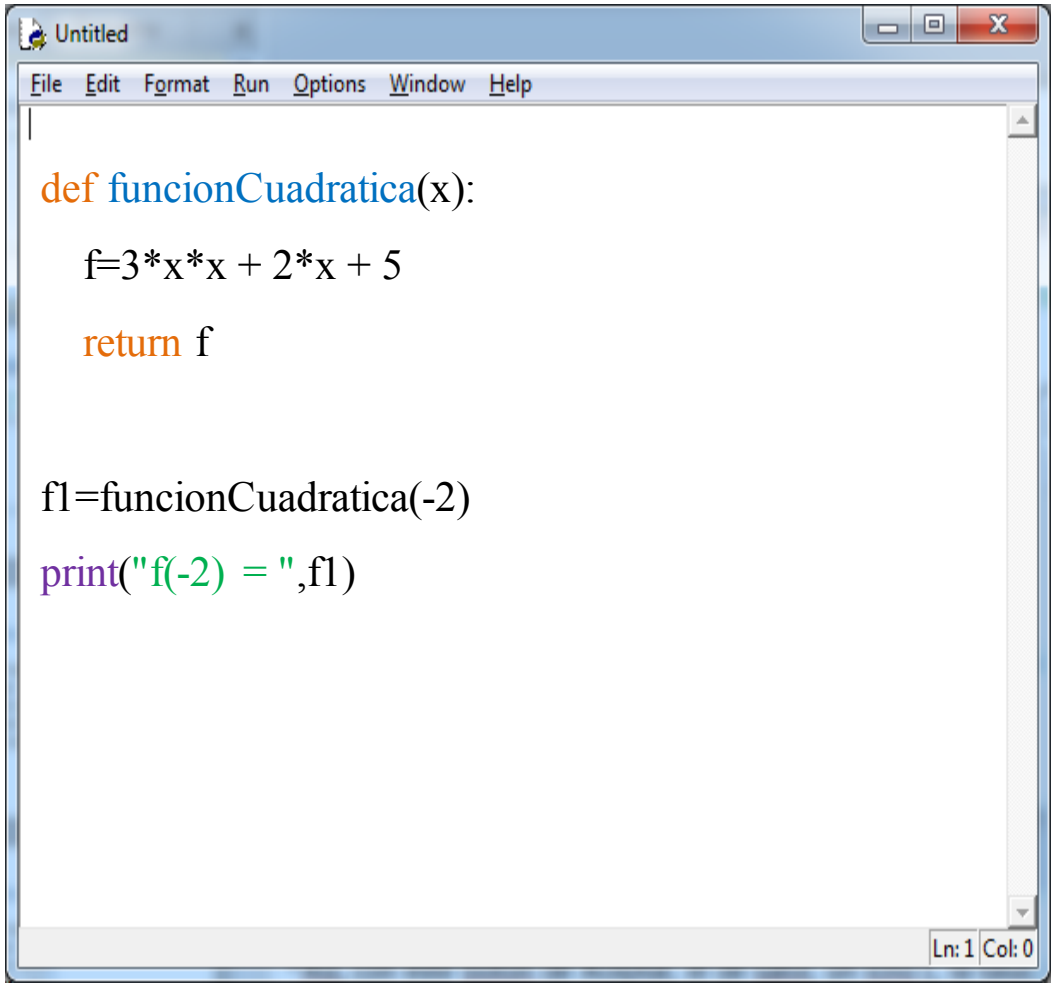
Una función se define indicando un nombre y las variables que necesita para hacer el cálculo correspondiente

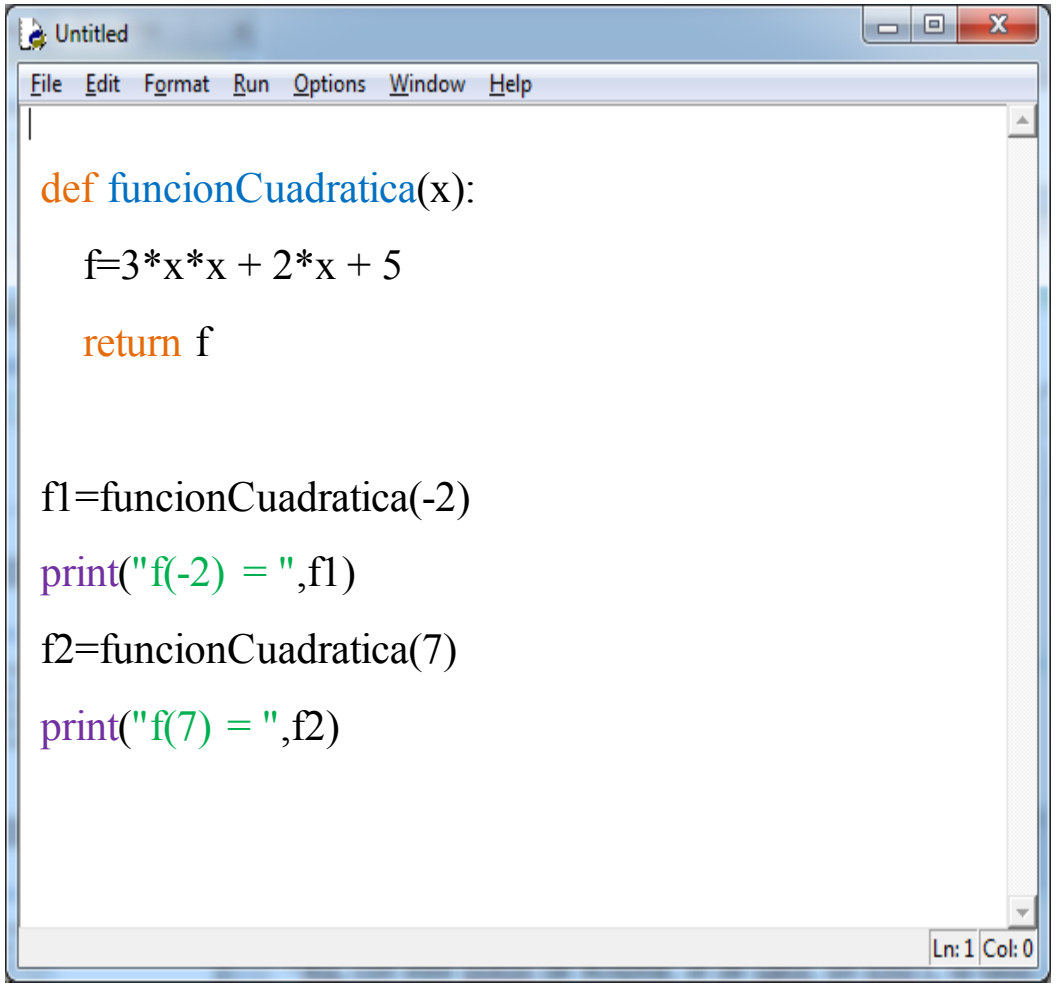


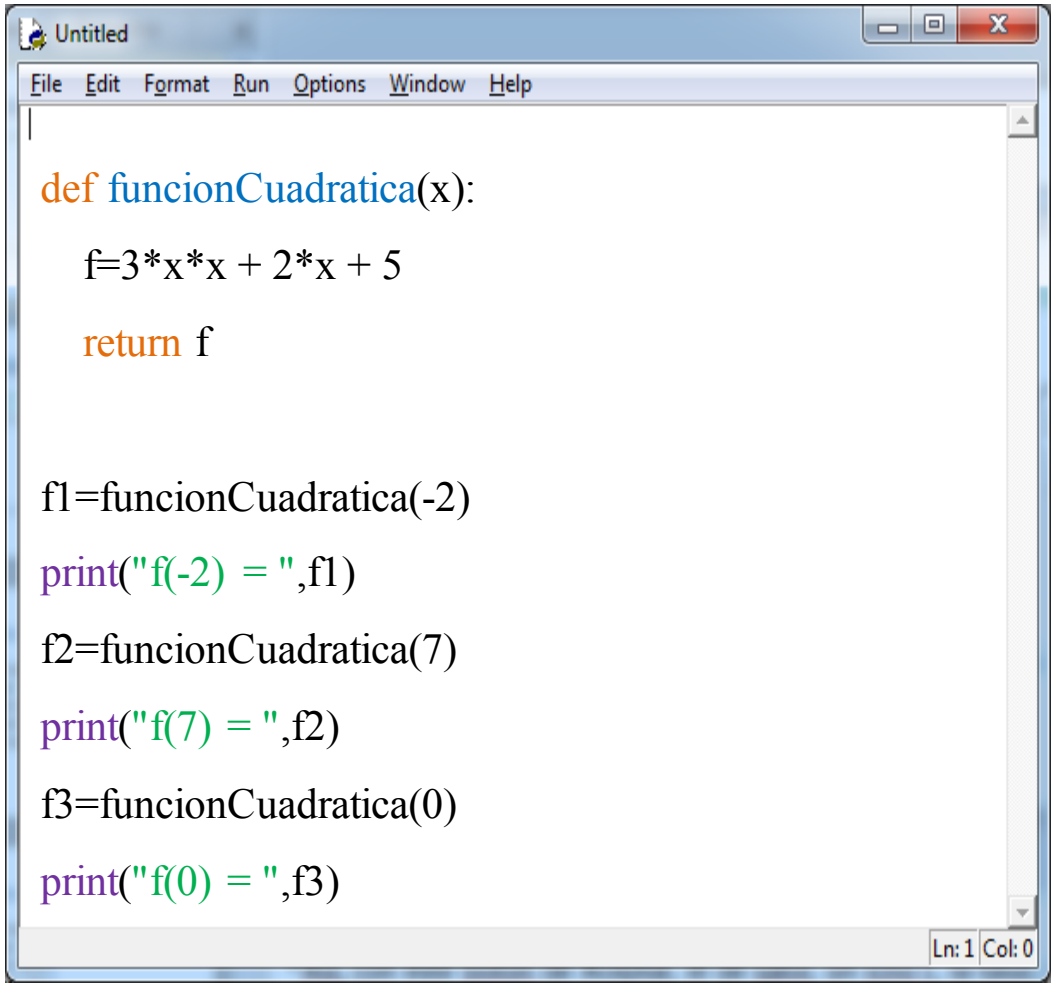
lo que calcula la función



valor que devuelve la función


Untitled
File Edit Format Run Options Window Help
def funcionCuadratica(x):
f=3*x*x + 2*x + 5
return f
f1=funcionCuadratica(-2)
print("f(-2) = ",f1)
Ln: 1 Col: 0

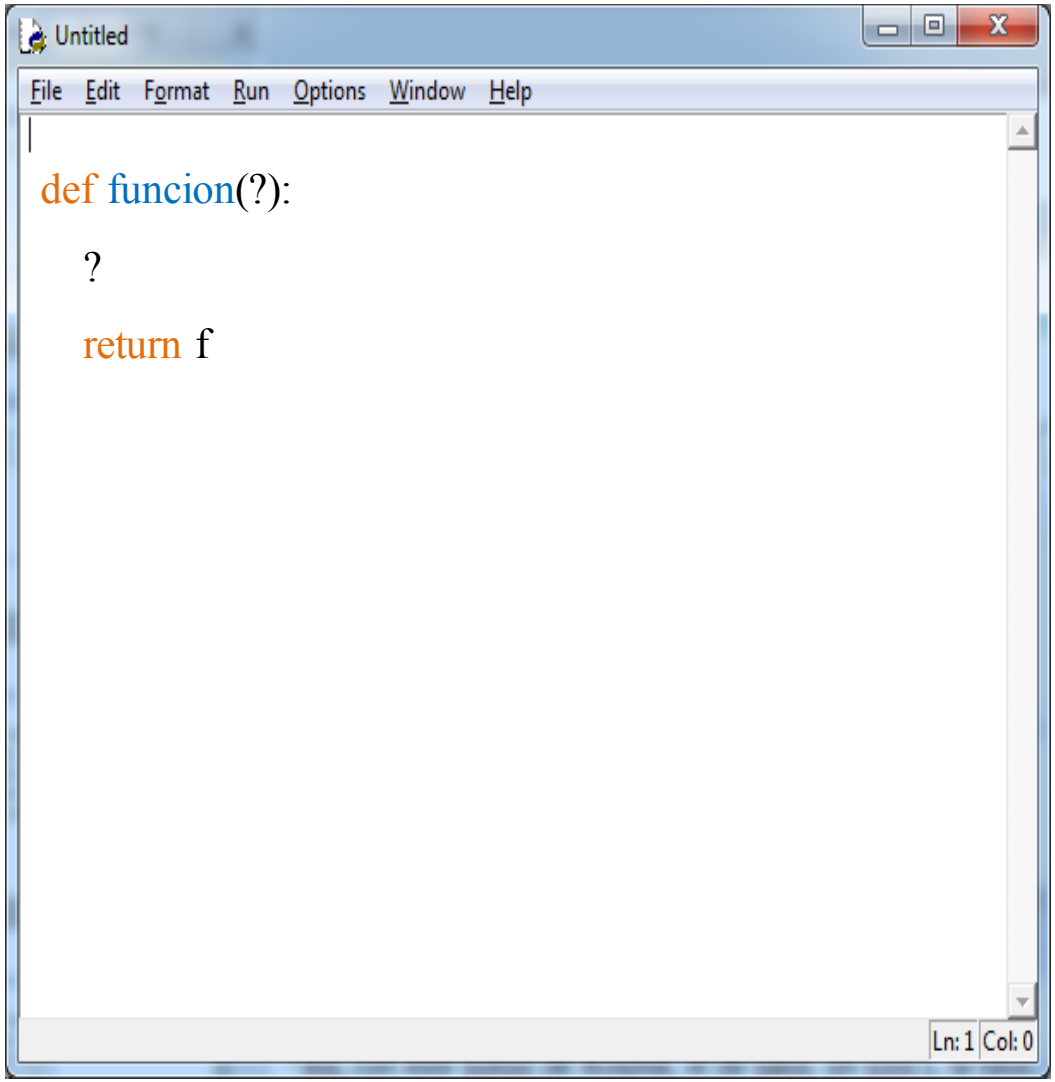

Untitled
File Edit Format Run Options Window Help
def funcionCuadratica(x):
f=3*x*x + 2*x + 5
return f
f1=funcionCuadratica(-2)
print("f(-2) = ",f1)
f2=funcionCuadratica(7)
print("f(7) = ",f2)
Ln: 1 Col: 0


Untitled
File Edit Format Run Options Window Help
def funcionCuadratica(x):
f=3*x*x + 2*x + 5
return f
f1=funcionCuadratica(-2)
print("f(-2) = ",f1)
f2=funcionCuadratica(7)
print("f(7) = ",f2)
f3=funcionCuadratica(0)
print("f(0) = ",f3)
Ln: 1 Col: 0

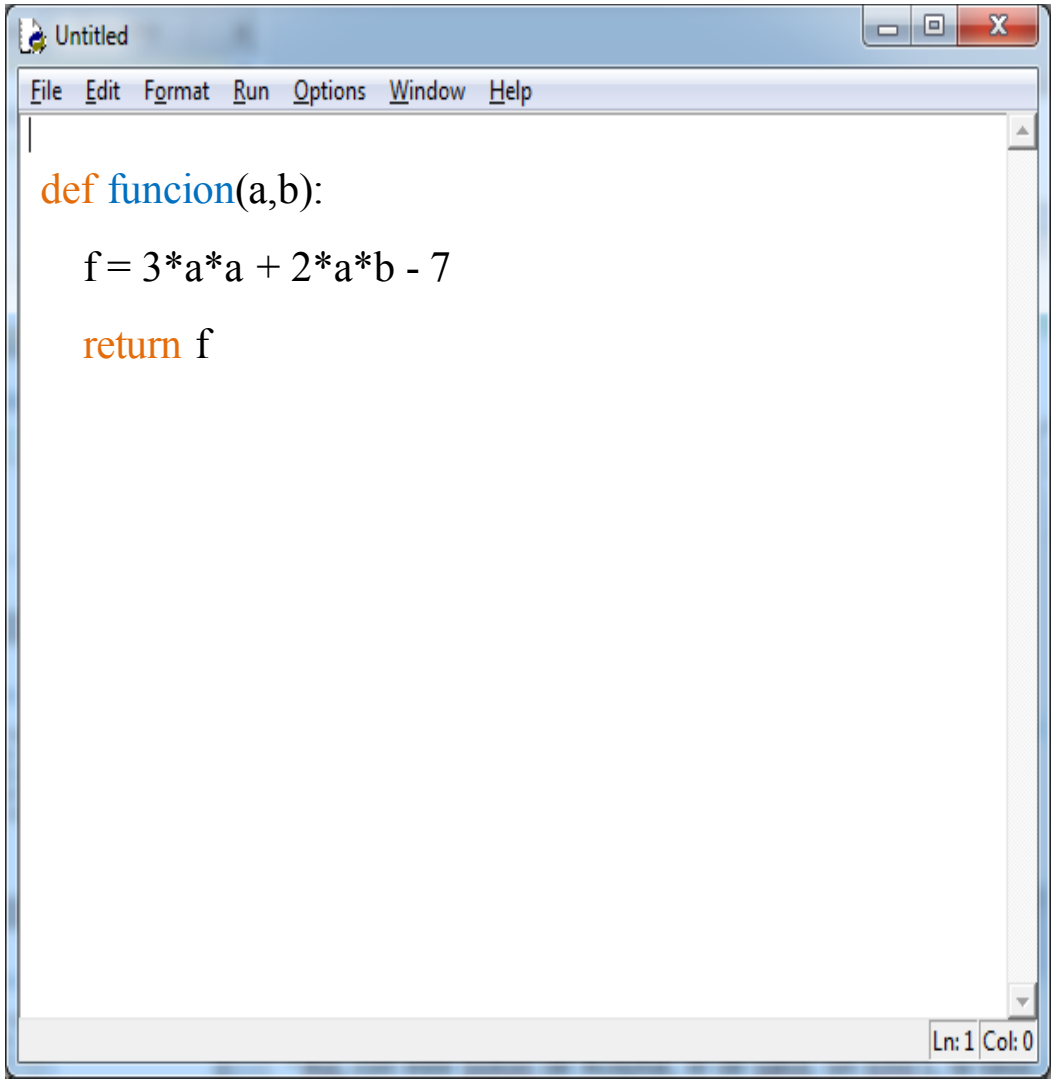
Funciones en Python

Problema: Desarrollar una función en Python que permita calcular el valor de f(a,b) definida de la siguiente manera:

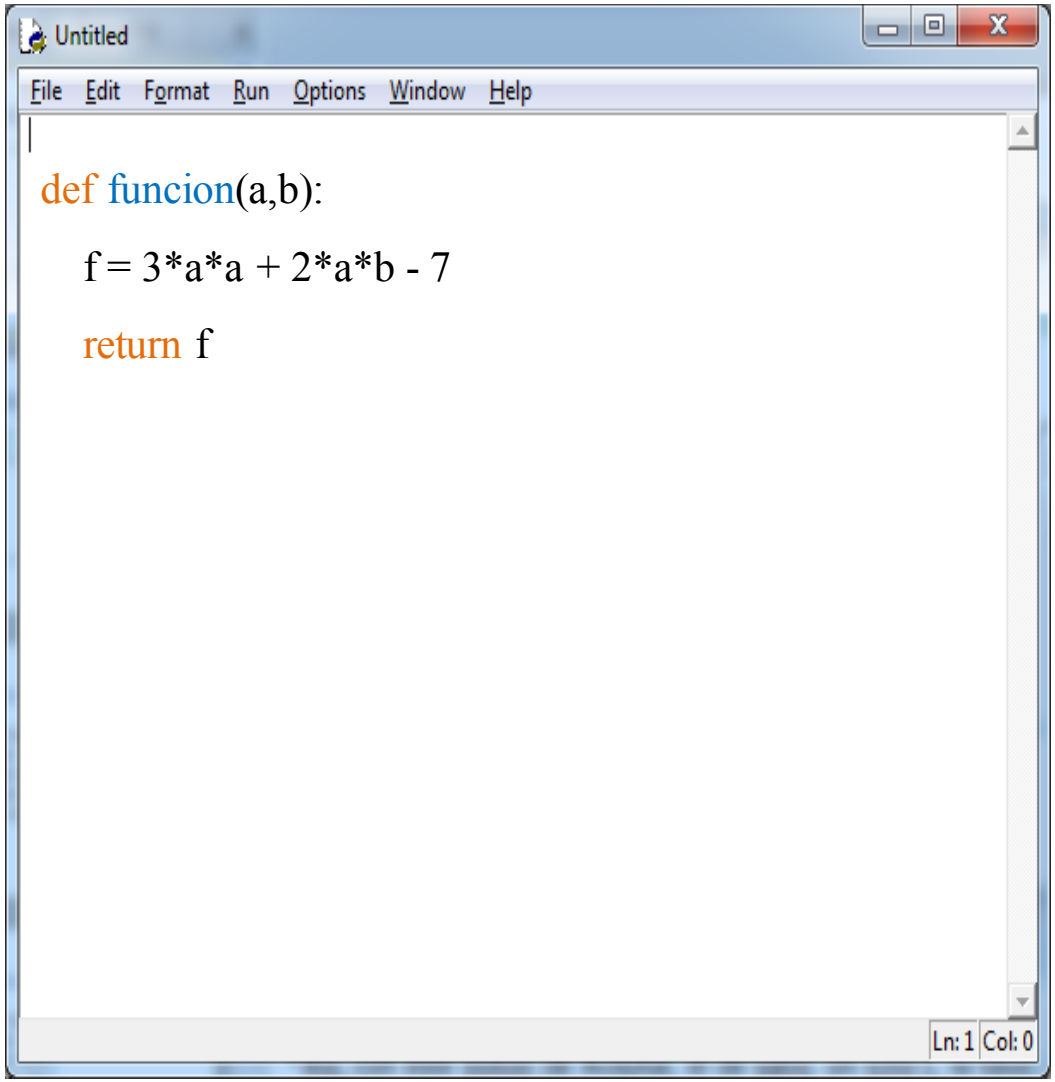
$$f(a,b) = 3a^2 + 2ab - 7$$


Untitled
File Edit Format Run Options Window Help
def funcion(?):
?
return f
Ln: 1 Col: 0

$f(a,b) = 3a^2 + 2ab - 7$

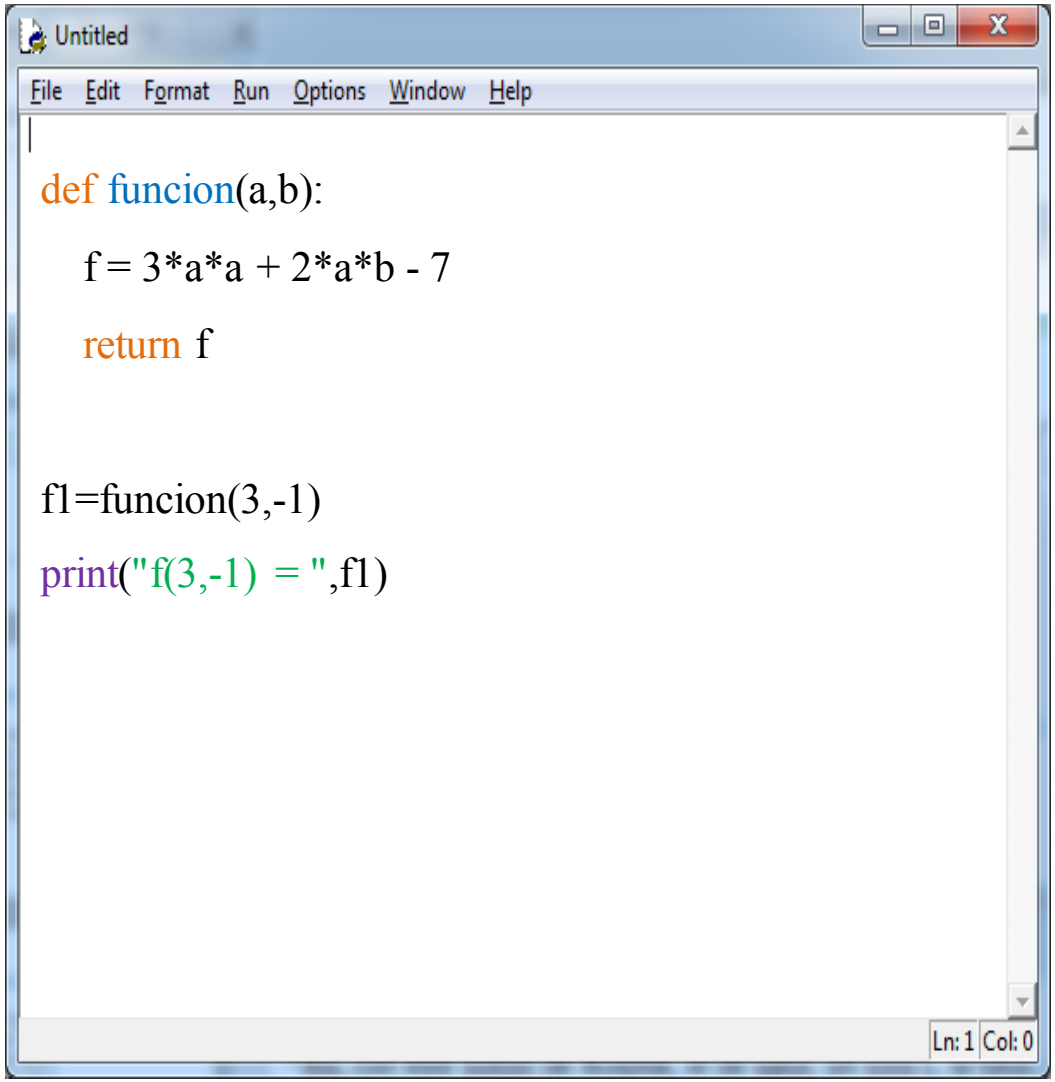

Untitled
File Edit Format Run Options Window Help
def funcion(a,b):
f = 3*a*a + 2*a*b - 7
return f
Ln: 1 Col: 0

$f(a,b) = 3a^2 + 2ab - 7$



Utilice la función por partes para los valores en la siguiente tabla:

a	b
3	-1
-7	0
6	2



Utilice la función por partes para los valores en la siguiente tabla:

a	b
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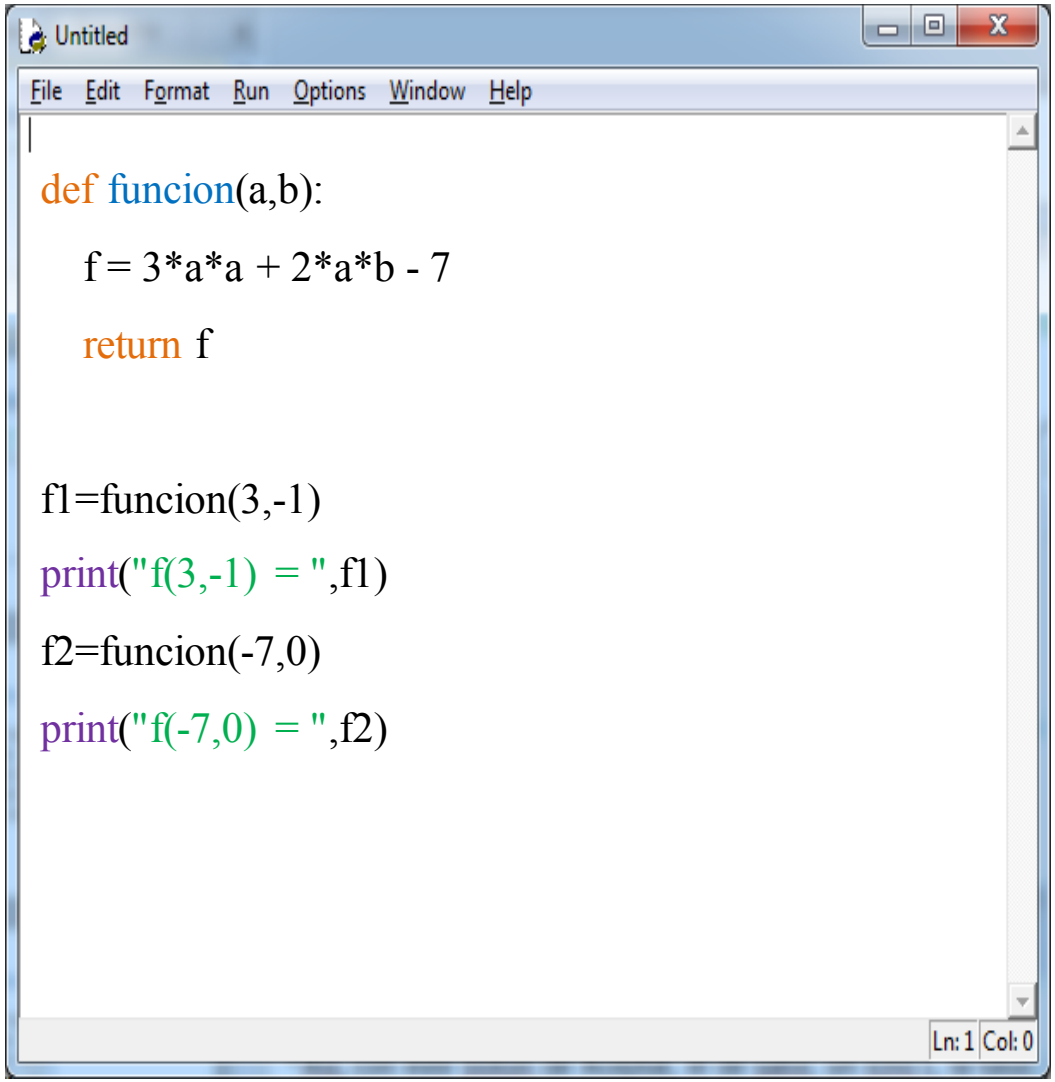

Utilice la función por partes para los valores en la siguiente tabla:

a	b
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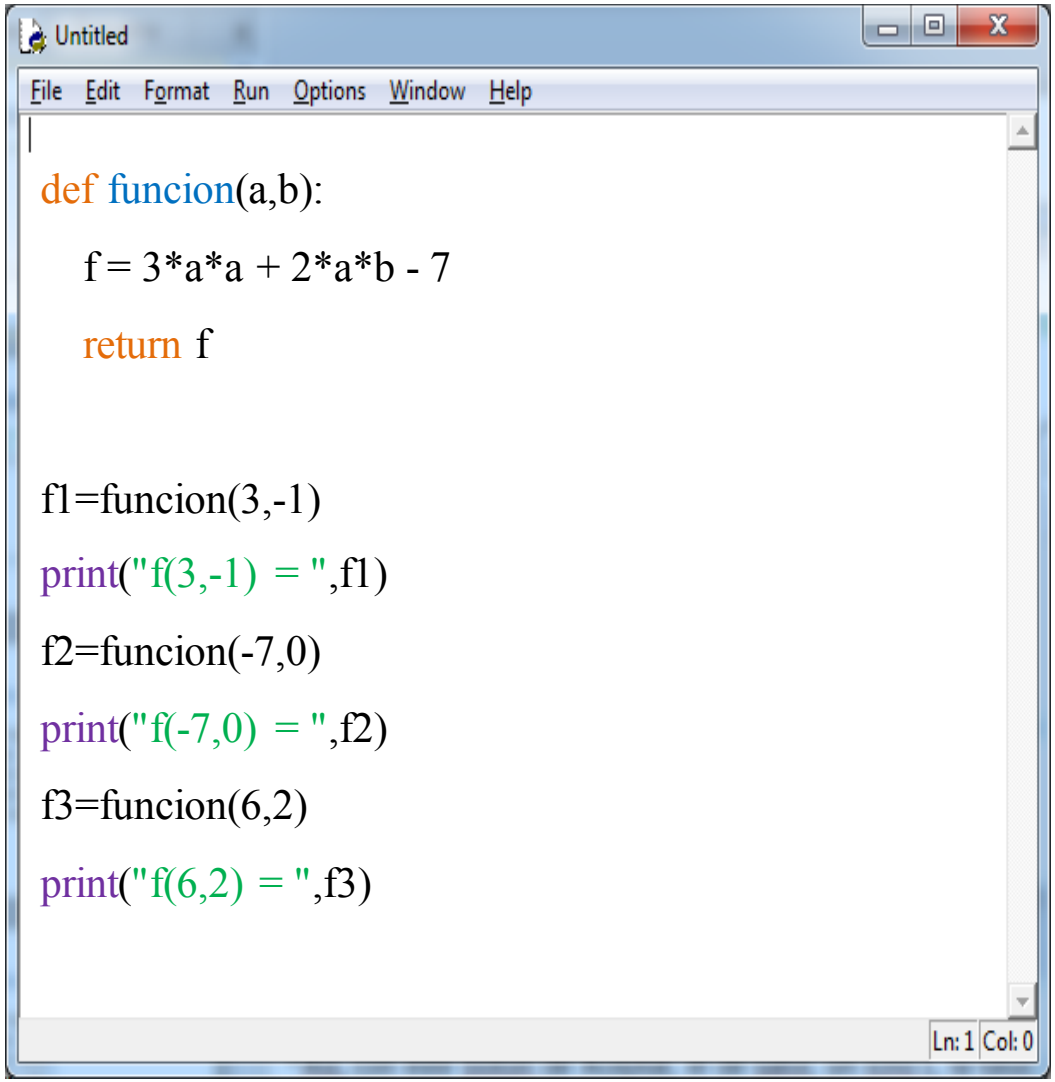
-7	0
6	2



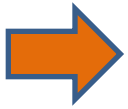
Utilice la función por partes para los valores en la siguiente tabla:

a	b
3	-1
-7	0
6	2

Funciones en Python

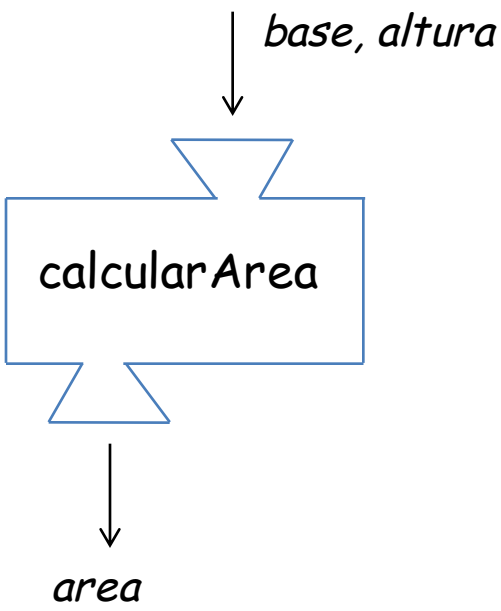
Problema: Desarrollar un **programa** que permita calcular el área de un triangulo dados su base y su altura

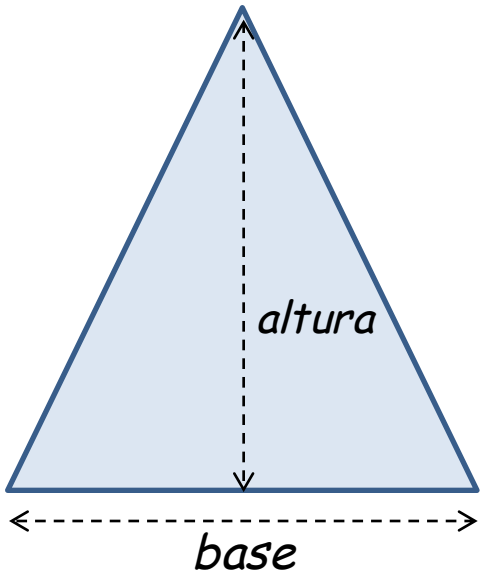
```
Digite la base: 3
Digite la altura: 5
```

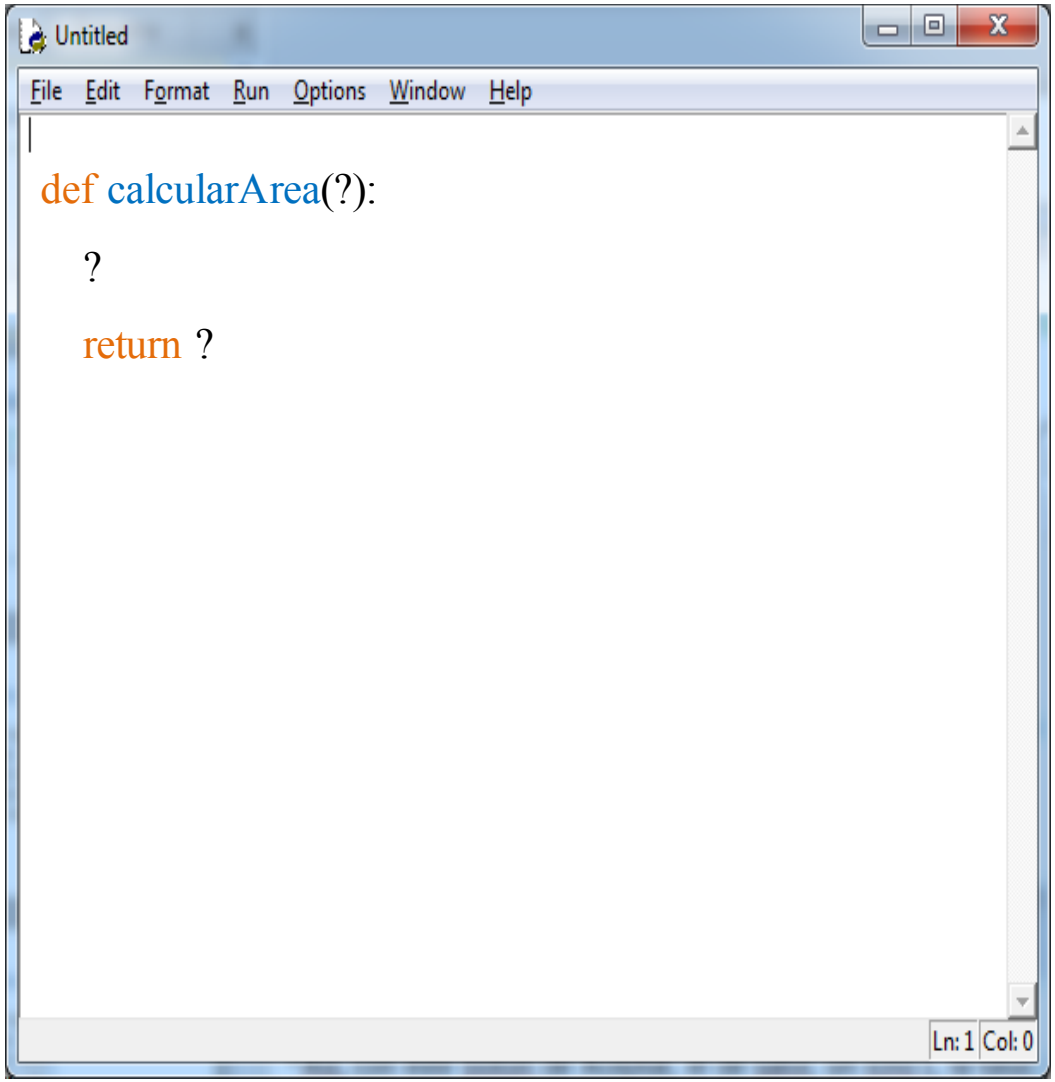


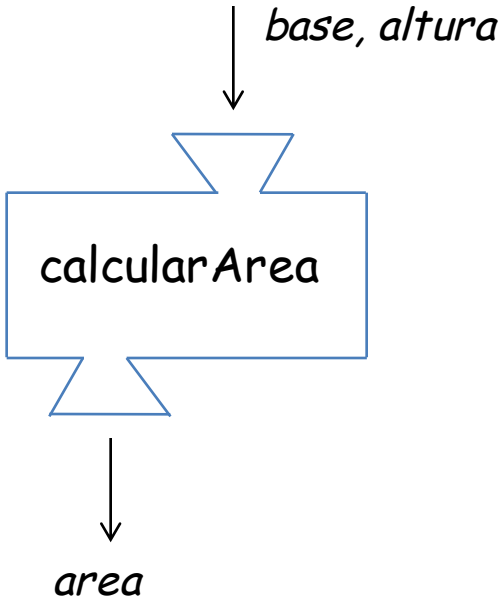
```
Area del triangulo: 7.5
```

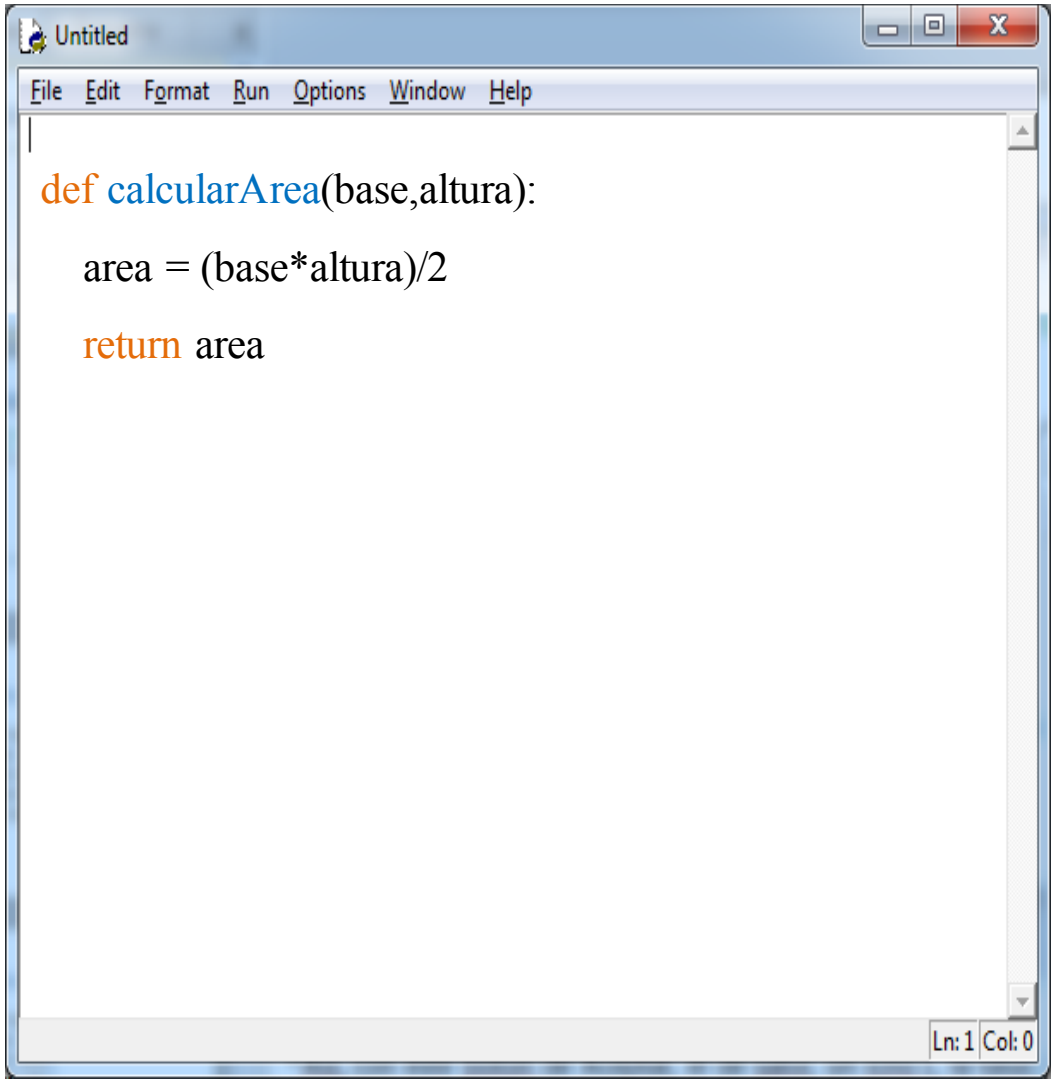
Funciones en Python

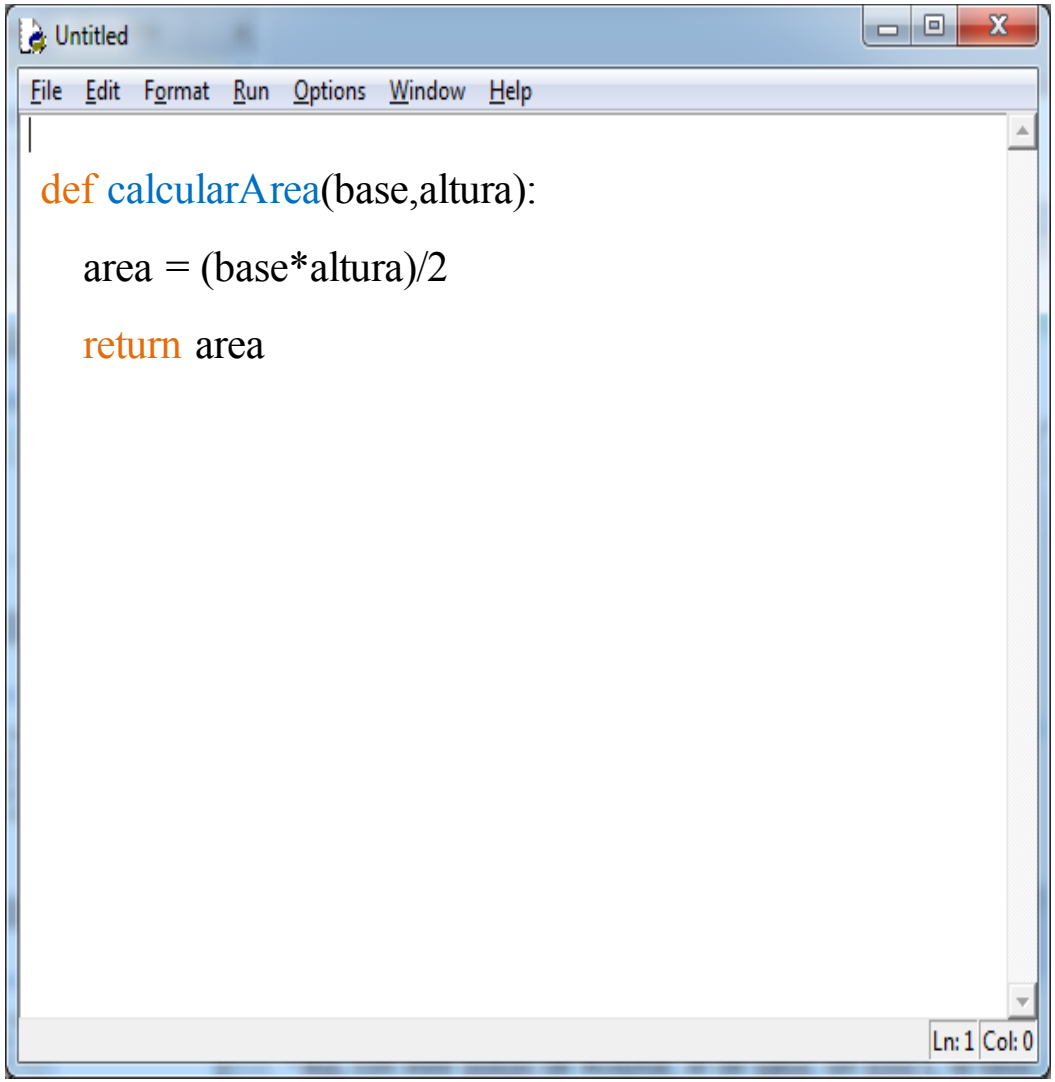





Untitled
File Edit Format Run Options Window Help
def calcularArea(?):
?
return ?
Ln: 1 Col: 0

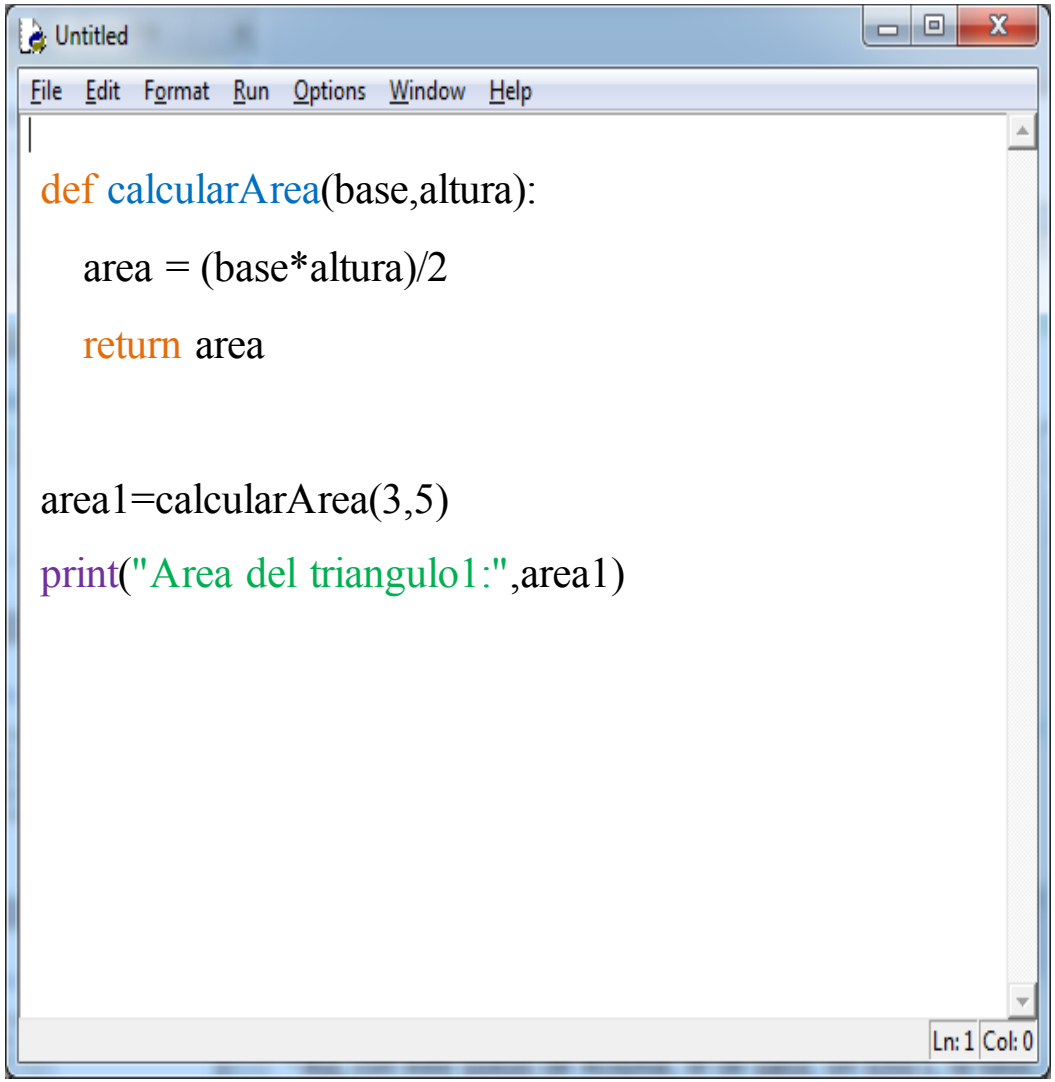

base, altura
calcularArea
area


Untitled
File Edit Format Run Options Window Help
def calcularArea(base,altura):
area = (base*altura)/2
return area
Ln: 1 Col: 0



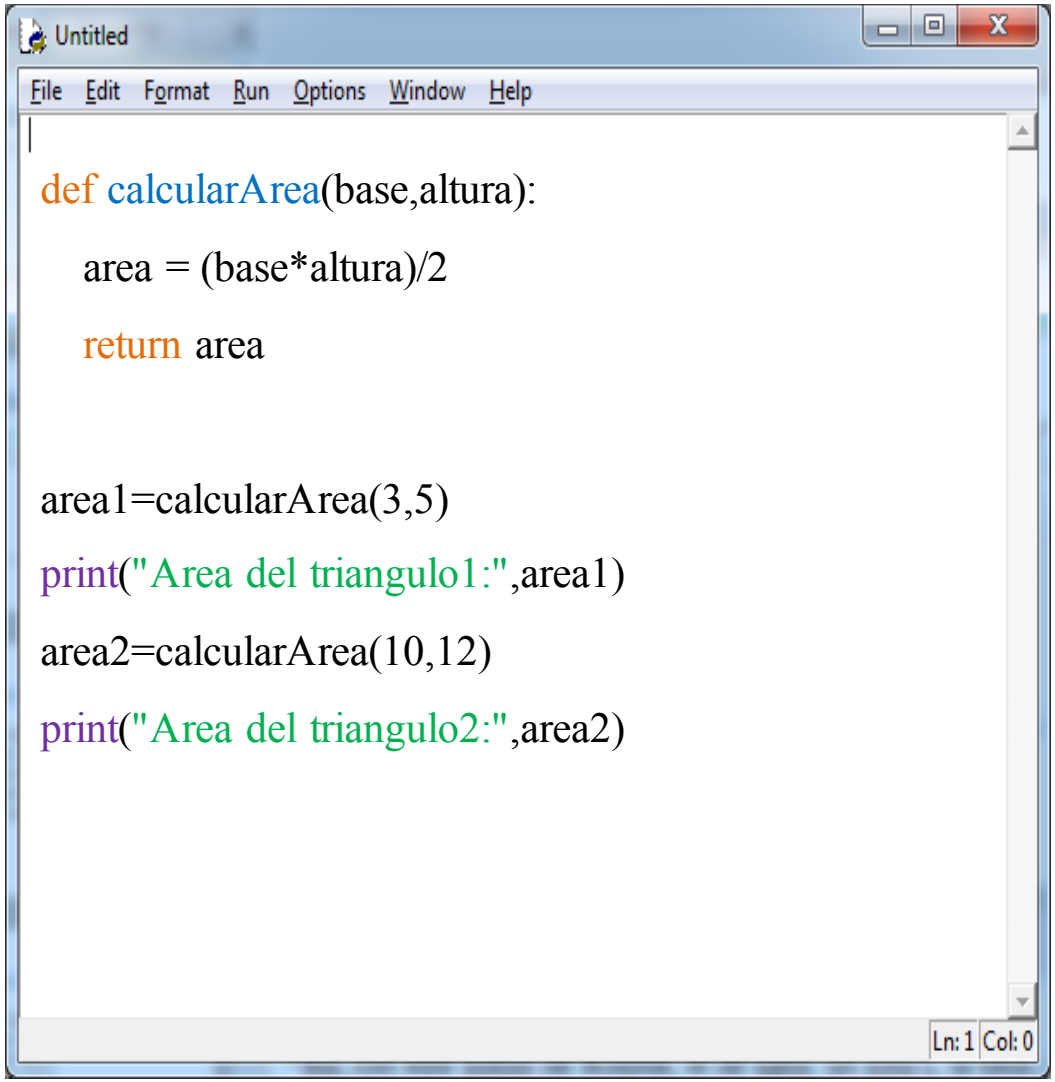
Utilice la función **calcularArea** para los valores en la siguiente tabla:

base	altura
3	5
10	12



Utilice la función **calcularArea** para los valores en la siguiente tabla:

base	altura
3	5
10	12



Utilice la función **calcularArea** para los valores en la siguiente tabla:

base	altura
3	5
10	12

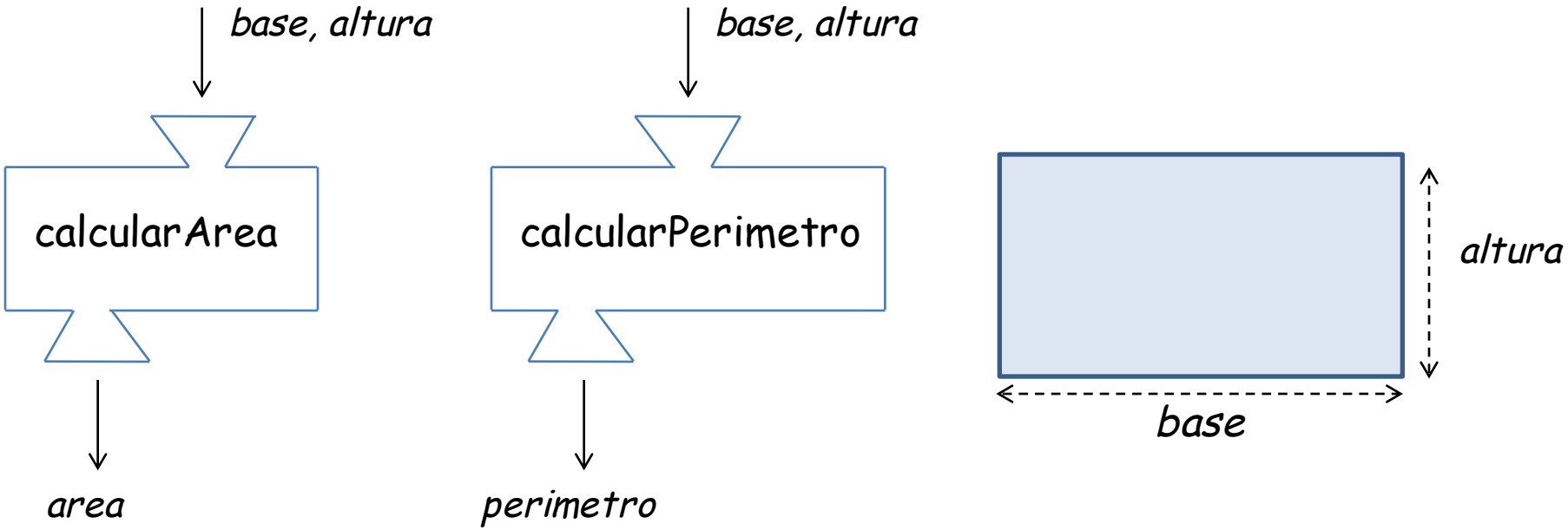
Funciones en Python

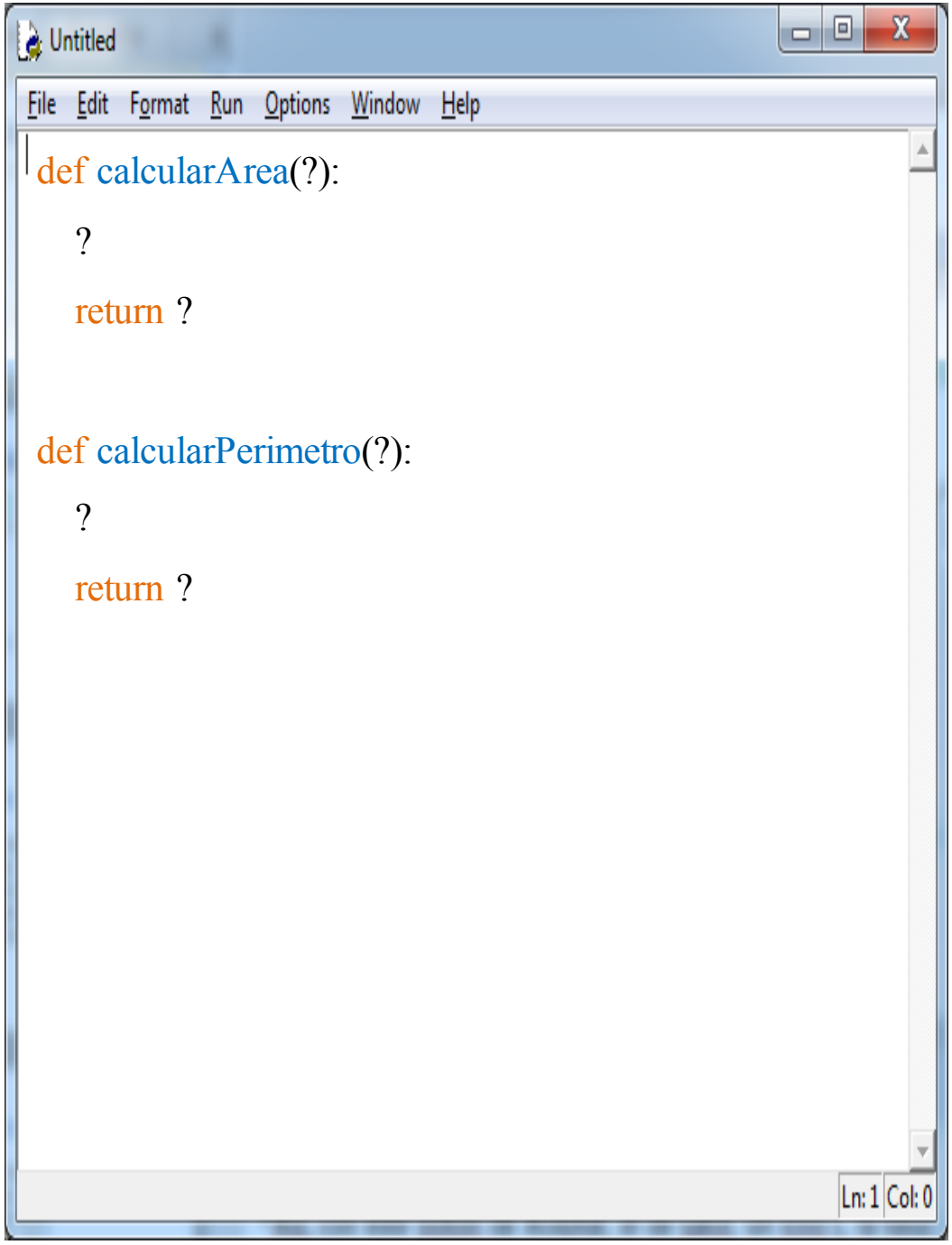
Problema: Desarrollar un **programa** que permita calcular el área y el perímetro de un rectángulo de dimensiones alto y ancho

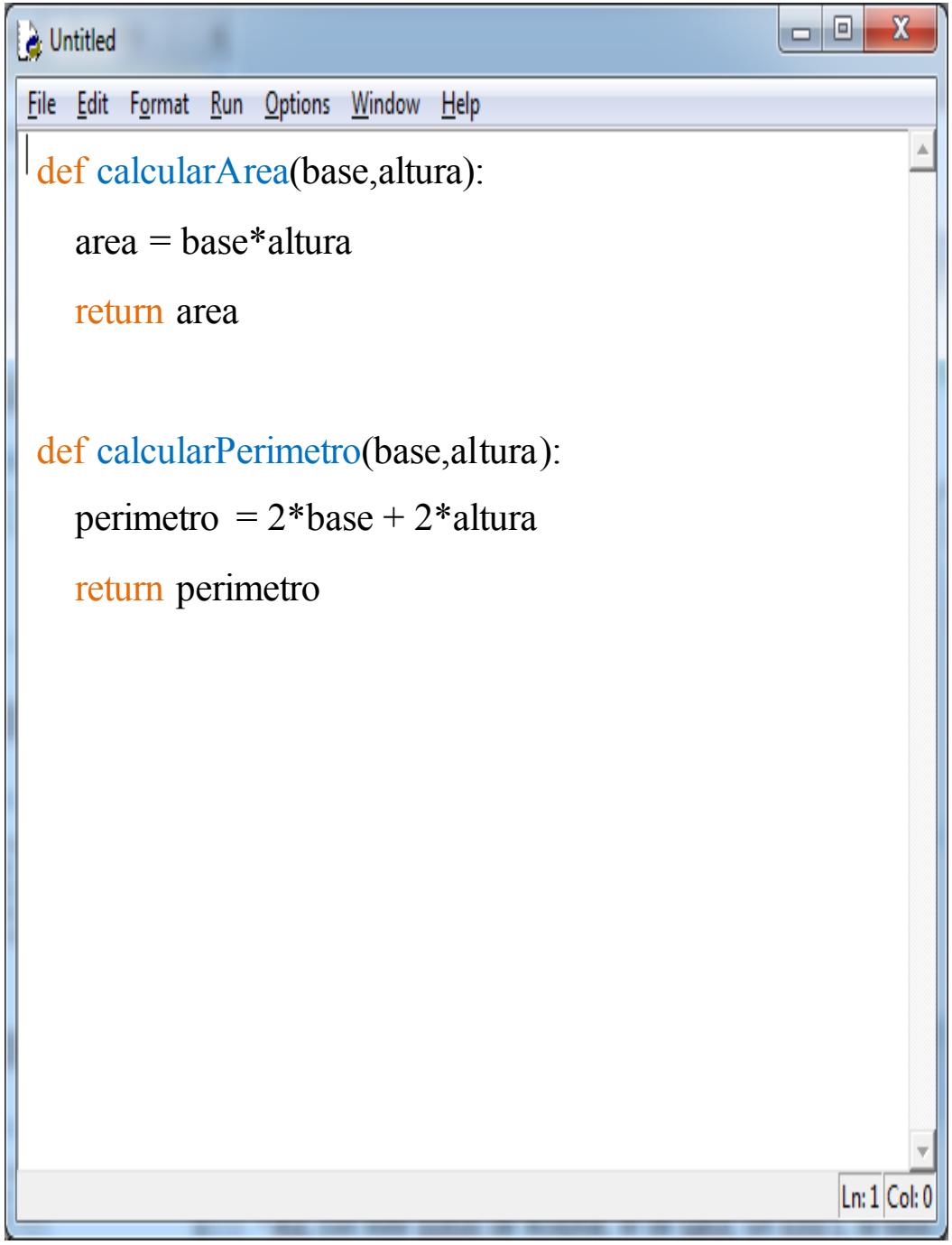
```
Digite el alto: 6.5
Digite el ancho: 10.98
```

```
Area del rectangulo: 71.37
Perimetro del rectangulo: 34.96
```

Funciones en Python




Untitled
File Edit Format Run Options Window Help
def calcularArea(?):
?
return ?
def calcularPerimetro(?):
?
return ?
Ln: 1 Col: 0

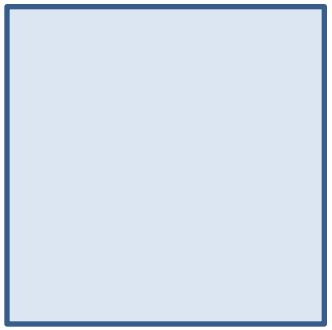

Untitled
File Edit Format Run Options Window Help
def calcularArea(base,altura):
area = base*altura
return area
def calcularPerimetro(base,altura):
perimetro = 2*base + 2*altura
return perimetro
Ln: 1 Col: 0

Untitled

File Edit Format Run Options Window Help

```
def calcularArea(base,altura):
    area = base*altura
    return area


def calcularPerimetro(base,altura):
    perimetro  = 2*base + 2*altura
    return perimetro
```

Ln: 1 Col: 0

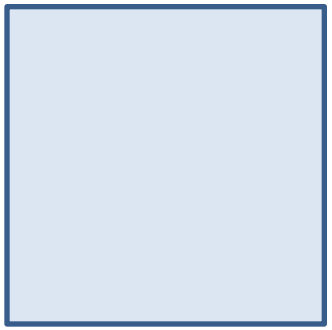


Untitled

File Edit Format Run Options Window Help

```
def calcularArea(base,altura):
    area = base*altura
    return area

def calcularPerimetro(base,altura):
    perimetro  = 2*base + 2*altura
    return perimetro

area1=calcularArea(6.5,7.1)
```

Ln: 1 Col: 0

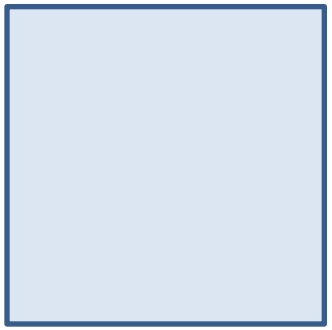


Untitled

File Edit Format Run Options Window Help

```
def calcularArea(base,altura):
    area = base*altura
    return area

def calcularPerimetro(base,altura):
    perimetro  = 2*base + 2*altura
    return perimetro

area1=calcularArea(6.5,7.1)
perimetro1=calcularPerimetro(6.5,7.1)
```

Ln: 1 Col: 0

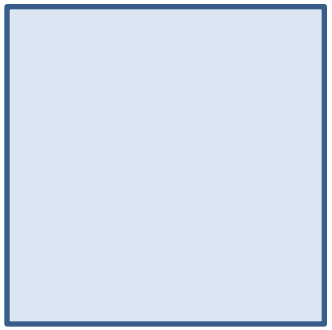


Untitled

File Edit Format Run Options Window Help

```
def calcularArea(base,altura):
    area = base*altura
    return area

def calcularPerimetro(base,altura):
    perimetro  = 2*base + 2*altura
    return perimetro

area1=calcularArea(6.5,7.1)
perimetro1=calcularPerimetro(6.5,7.1)
print("Area:",area1,"Perimetro:",perimetro1)
```

Ln: 1 Col: 0

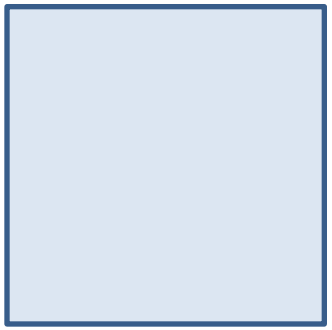


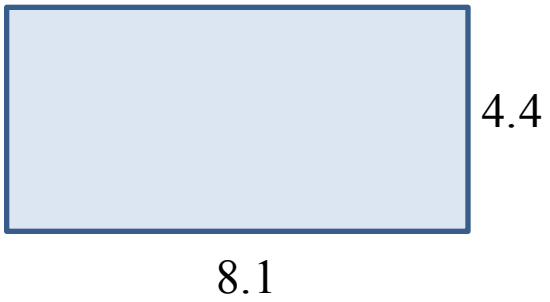
Untitled

File Edit Format Run Options Window Help

```
def calcularArea(base,altura):
    area = base*altura
    return area

def calcularPerimetro(base,altura):
    perimetro  = 2*base + 2*altura
    return perimetro

area1=calcularArea(6.5,7.1)
perimetro1=calcularPerimetro(6.5,7.1)
print("Area:",area1,"Perimetro:",perimetro1)
```

Ln: 1 Col: 0



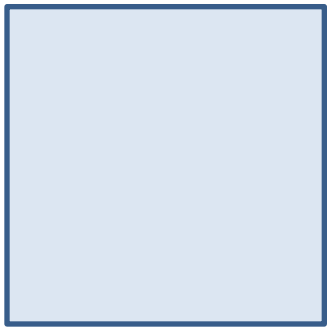


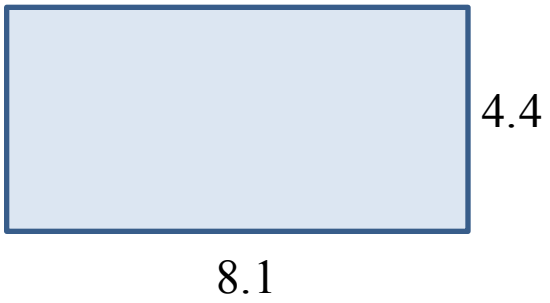
Untitled

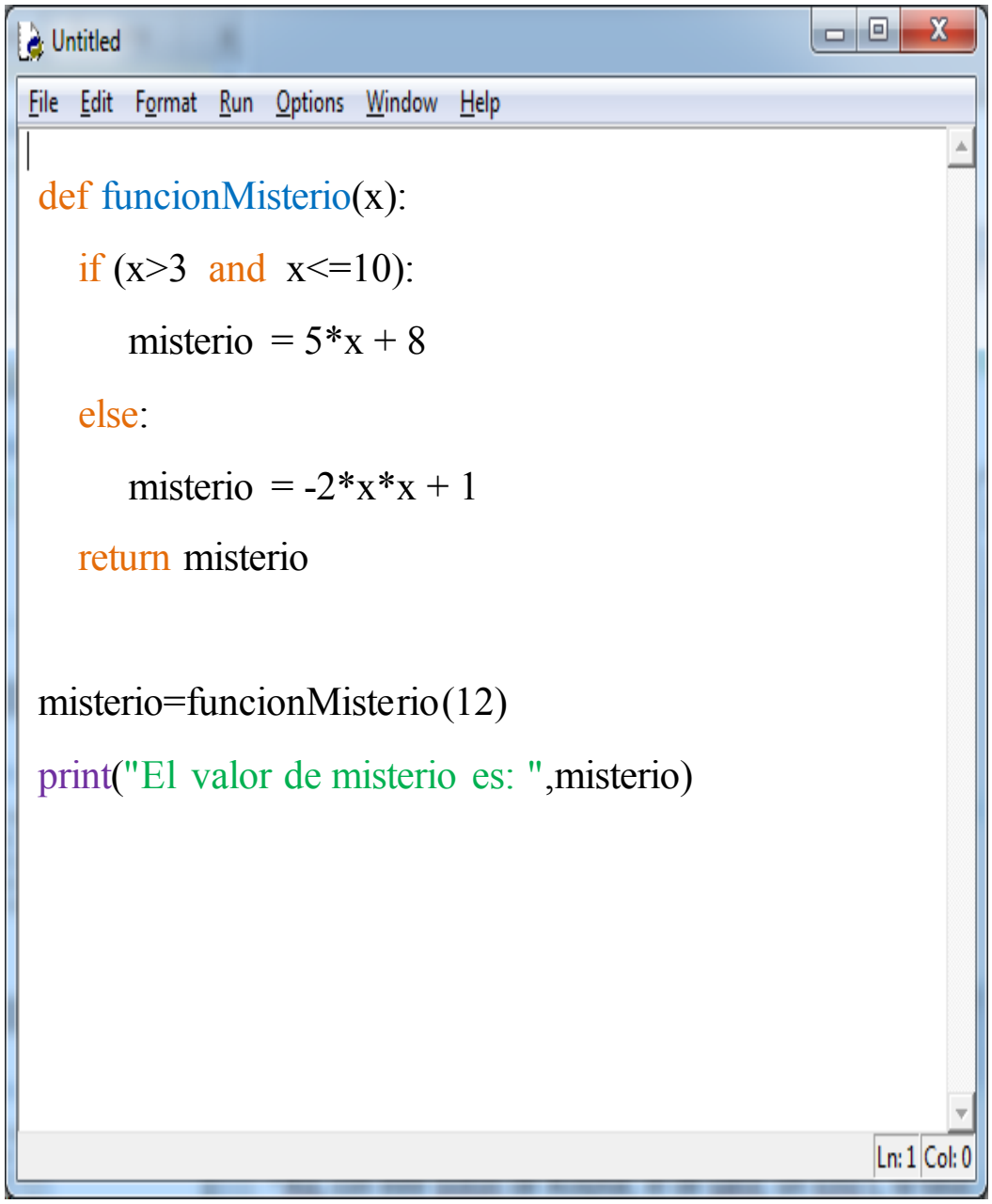
File Edit Format Run Options Window Help

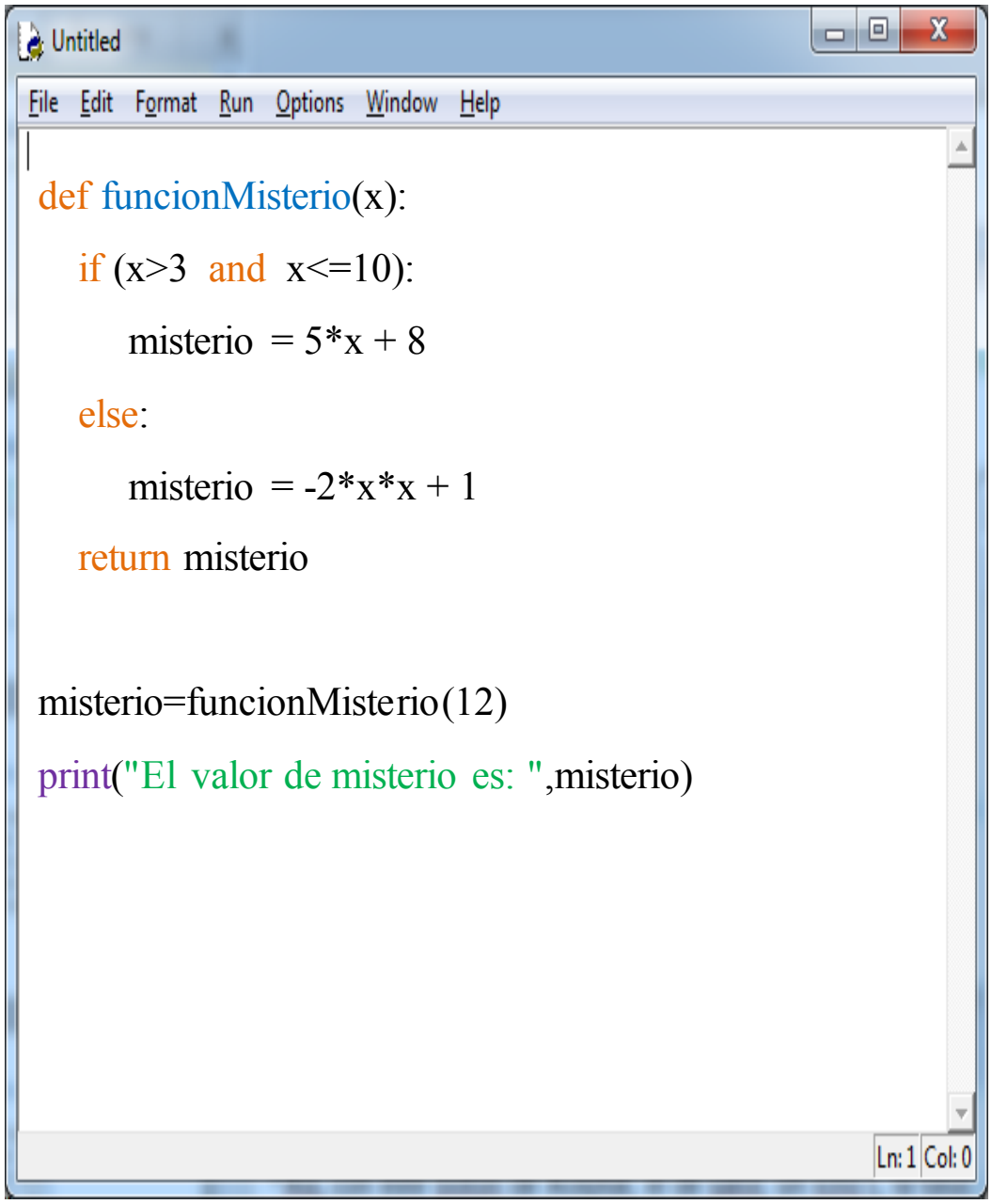
```
def calcularArea(base,altura):
    area = base*altura
    return area

def calcularPerimetro(base,altura):
    perimetro  = 2*base + 2*altura
    return perimetro

area1=calcularArea(6.5,7.1)
perimetro1=calcularPerimetro(6.5,7.1)
print("Area:",area1,"Perimetro:",perimetro1)

area2=calcularArea(8.1,4.4)
perimetro2=calcularPerimetro(8.1,4.4)
print("Area:",area2,"Perimetro:",perimetro2)
```

Ln: 1 Col: 0

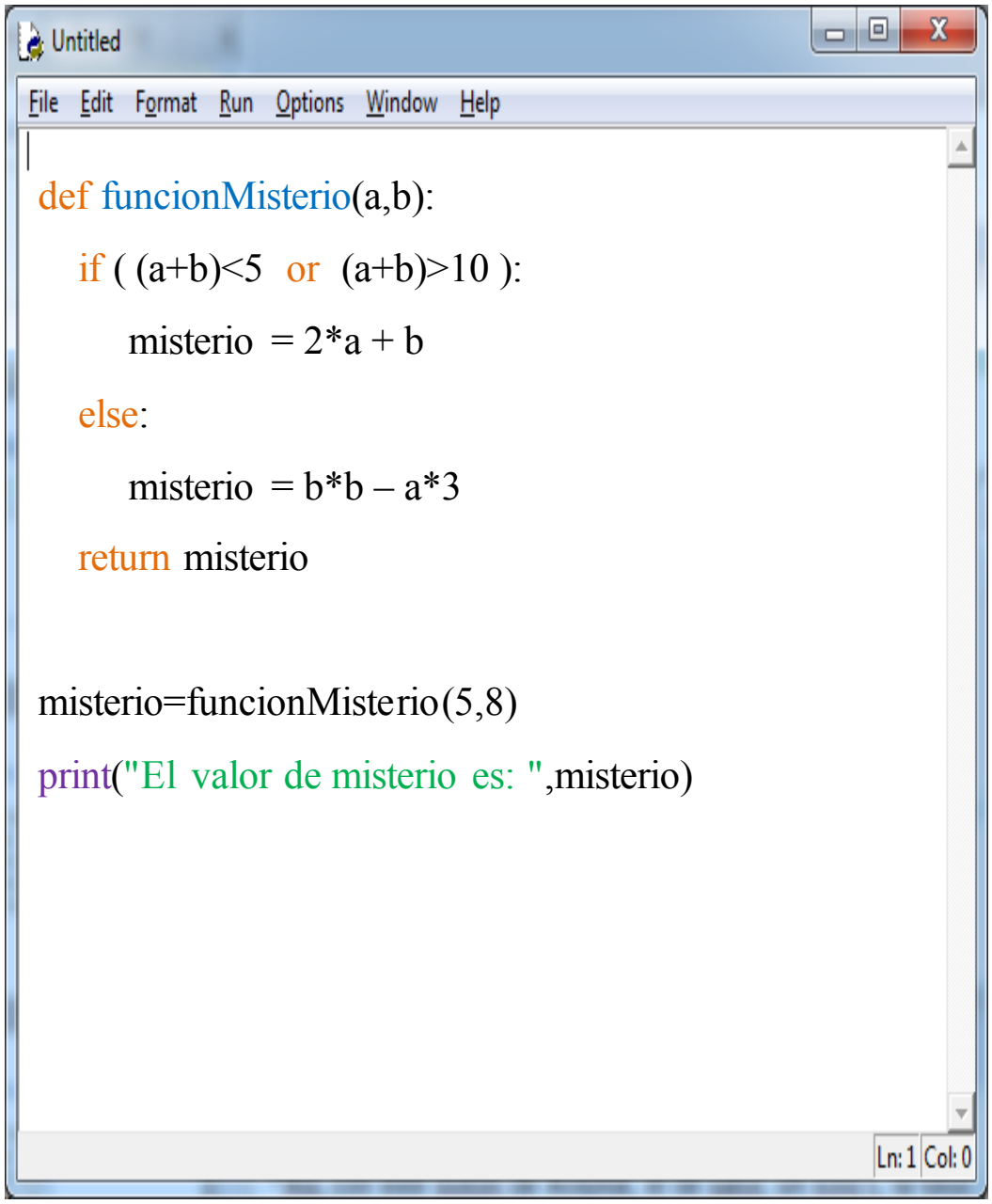


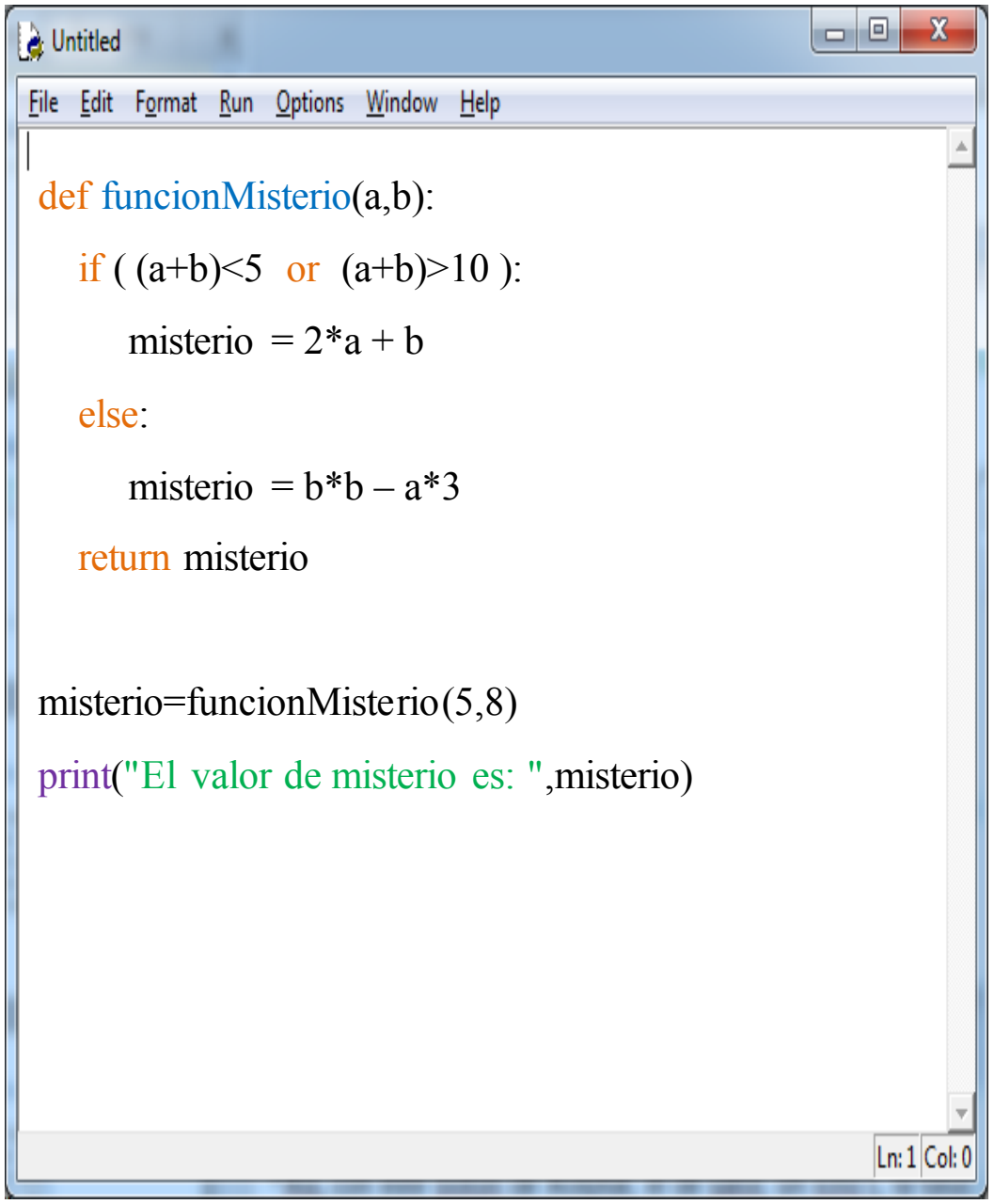



Untitled
File Edit Format Run Options Window Help
def funcionMisterio(x):
if (x>3 and x<=10):
misterio = 5*x + 8
else:
misterio = -2*x*x + 1
return misterio
misterio=funcionMisterio(12)
print("El valor de misterio es: ",misterio)
Ln: 1 Col: 0




```
El valor de misterio es -287
```


Untitled
File Edit Format Run Options Window Help
def funcionMisterio(a,b):
if ((a+b)<5 or (a+b)>10):
misterio = 2*a + b
else:
misterio = b*b – a*3
return misterio
misterio=funcionMisterio(5,8)
print("El valor de misterio es: ",misterio)
Ln: 1 Col: 0

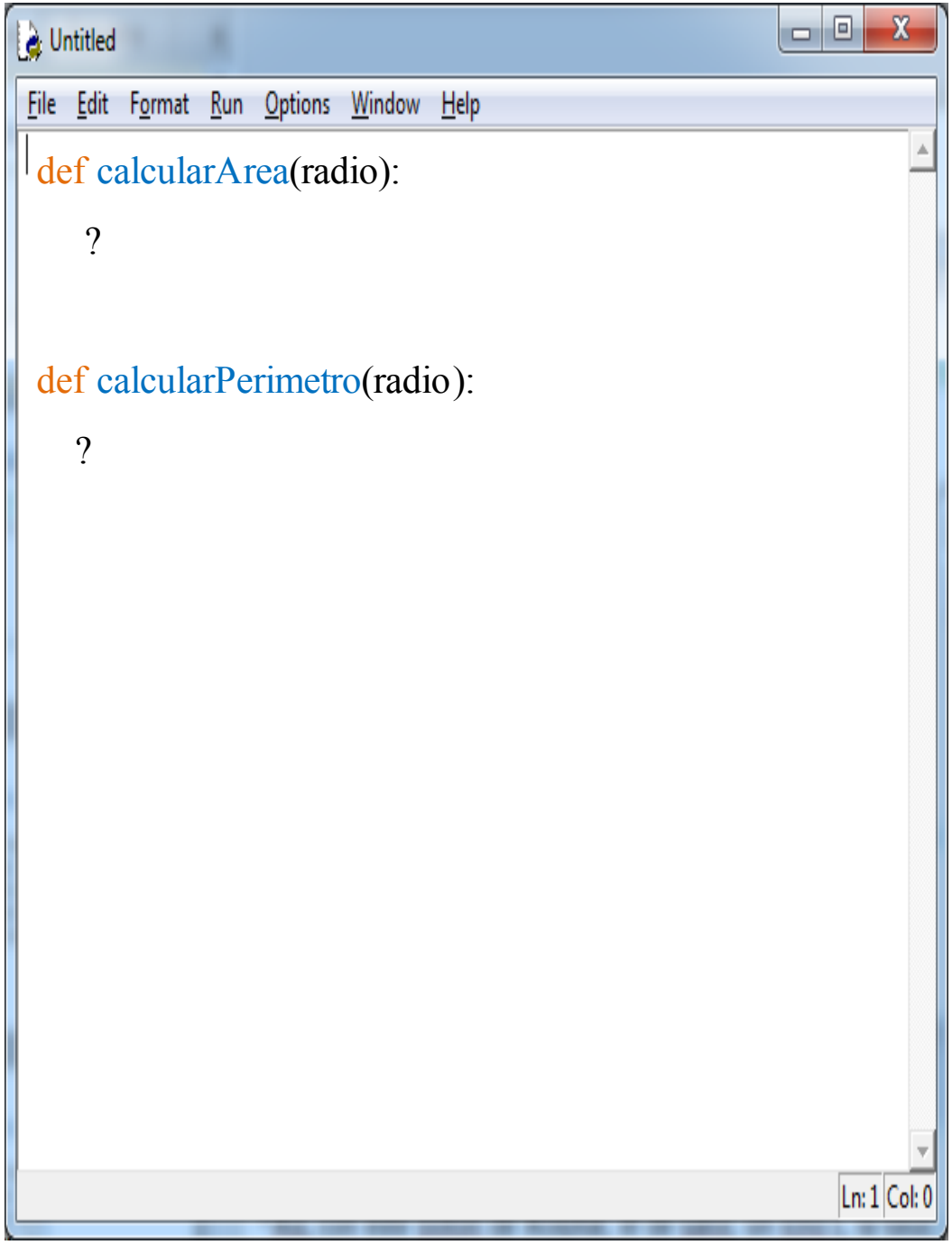



```
El valor de misterio es 18
```

Funciones en Python

Problema*: Desarrollar dos funciones, una que calcula el el área de un círculo y otra para el perímetro de un círculo. Usar las funciones tres veces para calcular el área y el perímetro de los círculos con los siguientes tres radios:

radio
1.5
5.4
7.8


Untitled
File Edit Format Run Options Window Help
def calcularArea(radio):
?
def calcularPerimetro(radio):
?
Ln: 1 Col: 0