**Task 1**

def factorial(n):

result = 1

for i in range(2, (n+1)):

result = result \* i;

return result

The time complexity of this function is **Θ(n)** due to the function always iterating n times.

**Task 2**

def factorial(n):

if n == 0:

return 1

else:

return n\*factorial(n-1)

**Task 3**

def foo(n):

result = 0

for i in range(1, n+1):

for j in range(1, i+1):

result = result + 1

return result

The time complexity of this function is **Θ(n2)** because i is used to iterate through n and j is used to iterate through i. This result has a time complexity similar to ½n2 which results in Θ(n2).

**Task 4**

\* =

**Task 5**

f(x) = 3x2 + 5x - 7

a. f’(x) = **6x+5**

b. f’(5) = 6(5)+5 = **35**

c. f’’(x) = **6**

d. f’’(5) = **6**

**Task 6**

f(x,y) = 3x2y + 5x – 7y

a. fx = **6xy + 5**

b. fx(5,2) = 6(5)(2)+5 = **65**

**Task 7**

* P(A and B) = 0.3 \* 0.6 = **0.18**
* P(A or B) = 0.3 + 0.6 – 0.18 = **0.72**
* P(not A) = 1.0 – 0.3 = **0.7**
* P(A|B) = **0.3** because they are independent

**Task 8**

**Task 9**

**Task 10**

Task 11

Task 12

Task 13