

```
def algoritmo3(n):
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```
    a = 1
```

```
    b = 1
```

```
    c = 1
```

```
    while a <= n:
```

```
        b += 2*a
```

```
        c += c**2
```

```
        a += 1
```

```
    return [b, c]
```

Estado (a, b, c)

Inicial (1, 1, 1)

Transformacion  $(a, b, c) \rightarrow (a+1, b+2a, c+c^2)$

$(1, 1, 1) \rightarrow (2, 1+2, \underbrace{1+1^2}_c) \rightarrow (3, \underbrace{1+2+4}_7, \underbrace{2+2^2}_6)$

$\rightarrow (4, 7+6, 6+6^2)$

$$b = 1 + \sum_{q=2}^{n+1} 2(q-1)$$

n=2

$$b = 1 + \sum_{q=2}^3 2(q-1)$$

$$b = 1 + 2 + 4$$

n=3

$$b = 1 + \sum_{q=2}^4 2(q-1) = 1 + 2(2-1) + 2(3-1) + 2(4-1)$$

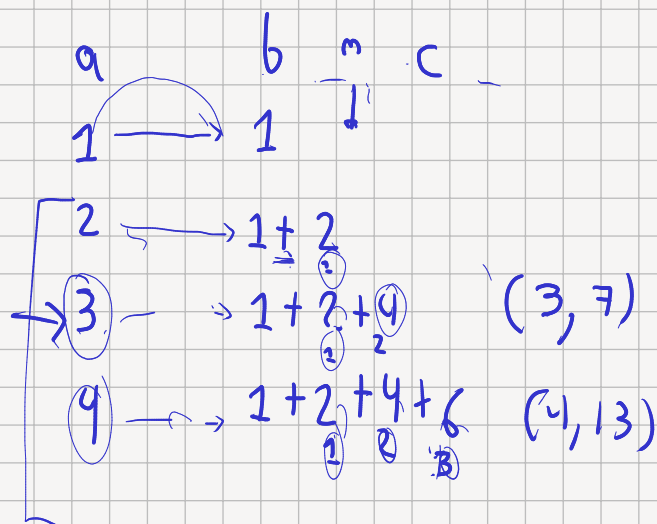
$$= 1 + 2 + 4 + 6 = 13$$

$$b = 1 + \sum_{q=2}^{n+1} 2(q-1) = 1 + \sum_{q=2}^{n+1} 2q - 2 \sum_{q=2}^{n+1} 1$$

$$1 + 2 \left( \frac{(n+1)(n+2)}{2} \right) - 2 = 2(n+1) + 2$$

$$2 + (n+1)(n+2) - 2(n+1)$$

$$1 + (n+1)(n+2-2) = 1 + n(n+1)$$



$$n+1 \quad 1 + 2 + 4 + 6 + \dots + 2n$$

$$a \quad 1 \quad (2) \quad (3) \quad (4) \quad \dots \quad (n+1)$$

| n | a | b  | Periodo |
|---|---|----|---------|
| 0 | 1 | 1  | r       |
| 1 | 2 | 3  | r       |
| 2 | 3 | 7  |         |
| 3 | 4 | 13 |         |

$$(n+1, 1+n(n+1), ?)$$

$$n = a-1$$

$$(a-1+1, 1+(a-1)(a-1+1), ?)$$

$$(a, 1+(a-1)a)$$

$$\begin{array}{ccccccccc} (1, 1) & \rightarrow & (2, 3) & \rightarrow & (3, 7) & \rightarrow & (4, 13) & \rightarrow \dots \rightarrow & (n+1, 1+n(n+1)) \\ \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 1+0(1) & & 1+2 & & 1+2 \times 3 & & 1+3 \times 4 & & 1+(n+1-1)(n+1) \\ & & & & & & & & 1+n(n+1) \end{array}$$

$$(a, b) \rightarrow (a+1, b+2a)$$

$$P(a) \rightarrow P(a+1)$$

$$\begin{array}{l} (a, b) \\ (a, a-1)a+1 \end{array} \begin{array}{l} \swarrow a=a+1 \\ \searrow a+2 \end{array} \begin{array}{l} a(a+1)+1 \leftarrow \\ (a-1)a+1+2a \\ a(a-1+2)+1 \\ a(a+1)+1 \leftarrow \end{array}$$

$$\text{Term}_n? \quad a=1, 2, 3, \dots, n+1$$

```
def algoritmo3(n):
    a = 1
    b = 1
    c = 1
    while a <= n:
        b += 2*a
        c += c**2
        a += 1
    return [b, c]
```

$$(1, 1) \rightarrow (2, 1 + 1^2) \rightarrow (3, 1 + 1^2 + 2^2)$$

$$(4, \underline{1 + 1^2 + 2^2 + 6^2}) \rightarrow (5, 1 + 1^2 + 2^2 + 6^2 + 42^2)$$

$$c = a \times 2$$

| a | b    | c  |
|---|------|----|
| 1 | 1    | 1  |
| 2 | 2    | 2  |
| 3 | 6    | 7  |
| 4 | 42   | 43 |
| 5 | 1806 | 42 |

$$C(0) = C(C-1) \times (C(C-1) + 1)$$

$$C(1) = 1$$

$$C(2) = C(1) (C(1) + 1)$$

$$C(3) = C_2 (C_2 + 1)$$

$$L \rightarrow C_a = C_{a-1}^2 + C_{a-1} \quad C_1 = 1$$

$$n(2^n) \quad O(n^n)$$

$$C_1 = 1$$

$$C_2 = C_1^2 + C_1 = 2$$

$$C_3 = C_2^2 + C_2 = 6$$

$$C_4 = 6^2 + 6 = 42$$

$$b^* = 2b \rightarrow 2^n$$

$$b_n = 2b_{n-1}$$

$$b_n = (b_{n-1})^n$$