

NOM :	PRÉNOM :	GROUPE :
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DURÉE : 90'

DOCUMENTS, CALCULETTES, TÉLÉPHONES ET ORDINATEURS INTERDITS

1 Exécution d'une séquence d'instructions

Il s'agit du calcul de la racine carrée entière y
d'un nombre entier a : $y = 23 = \sqrt{529} = \sqrt{a}$.

```
529 1 529 1 0
529 1024 529 1 0
529 256 273 768 384
529 64 273 320 160
529 16 129 176 88
529 4 45 92 46
529 1 0 47 23
529 1 0 47 23
```

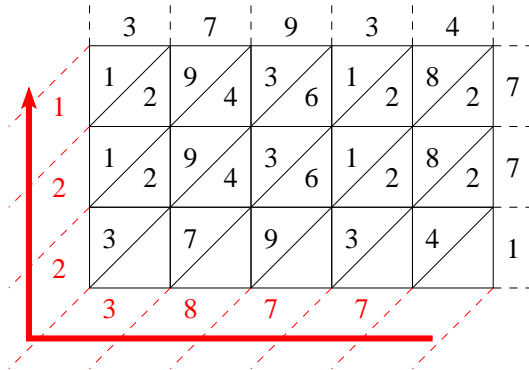
2 Calcul de π

```
1 # -*- coding: utf-8 -*-
2
3 from math import *
4
5 n = 100000
6
7 y = 0.
8 for k in range(1,n+1):
9     y = y + 1./(k*k)
10
11 print(pi-sqrt(6*y))
```

3 Zéro d'une fonction

```
1 # -*- coding: utf-8 -*-
2
3 from math import *
4
5 a, b = 3., 4.
6 s = 1.e-9
7 f = cos
8
9 while (b - a) > s:
10     x = (b*f(a) - a*f(b))/(f(a)-f(b))
11     if f(a)*f(x) < 0: b = x
12     else: a = x
13
14 print(3*pi/2,x,f(x))
```

4 Tableau d'Ibn al-Banna



The diagram shows a 3x5 grid of numbers, with a red arrow pointing upwards on the left and a red arrow pointing to the right at the bottom. The grid is divided into three rows and five columns. The numbers in the grid are as follows:

	3	7	9	3	4	
1	1	2	9	4	3	6
2	1	2	9	4	3	6
2	3	7	9	3	4	1
	3	8	7	7		

The red arrow on the left points upwards, indicating the row index. The red arrow at the bottom points to the right, indicating the column index. The numbers in the grid are arranged in a way that suggests a specific pattern or calculation, likely related to the concept of 'al-Banna's table' mentioned in the text.