

## Exercice 4

### Q1.a

```
from math import sqrt
```

### Q1.b

```
def distance_points(a : tuple, b : tuple) -> real :
    return sqrt((b[0]**2 - a[0]**2) + (b[1]**2 - a[1]**2))
    sqrt((b[0]-a[0])**2+(b[1]-a[1])**2)
```

### Q2

```
def distance(p : tuple, a : tuple, b : tuple) -> real :
    if a == b :
        raise ValueError('a et b identiques !')
        return distance_points(a,p)
    return distance_point_droite(p, a, b)
```

### Q3

```
def le_plus_loin(ligne):
    n = len(ligne)
    deb = ligne [0]
    fin = ligne [n-1]
    dmax = 0
    indice_max = 0
    for idx in range(1, n-1):
        p = ligne[idx-1] p = ligne[idx]
        d = distance(p, deb, fin)
        if dmax < d:
            dmax = d
            indice_max = idx
    return indice_max, dmax
```

### Q4

```
def extrait (tab, i, j):
    assert 0 <= i <= j < len (tab)
    return [tab[k] for k in range(i, j+1)]
```

### Q5

```
def simplifie(ligne, seuil):
    n = len(ligne)
    if n <= 2:
        return ligne
```