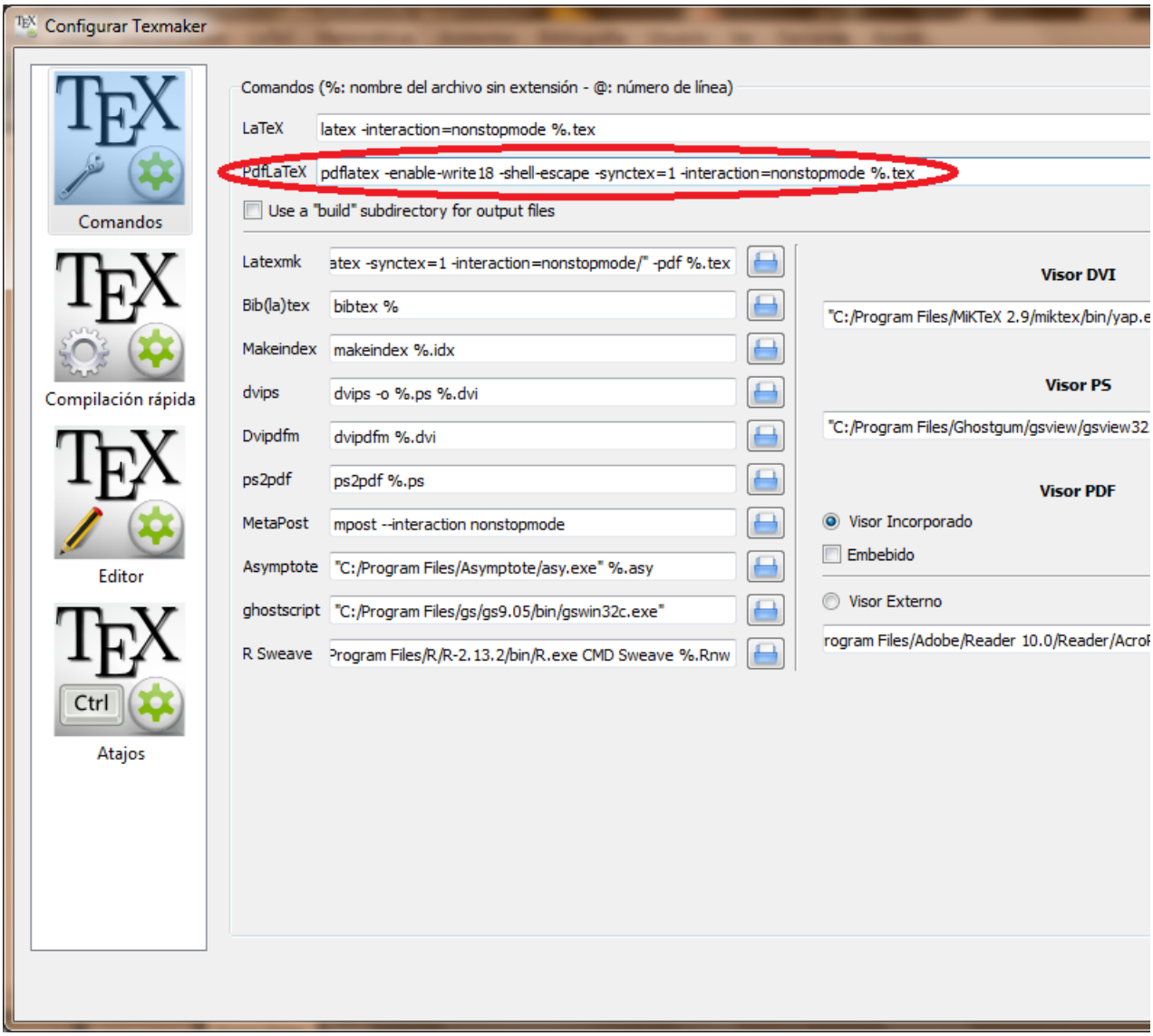
Ejecutar código Python en documentos LaTeX

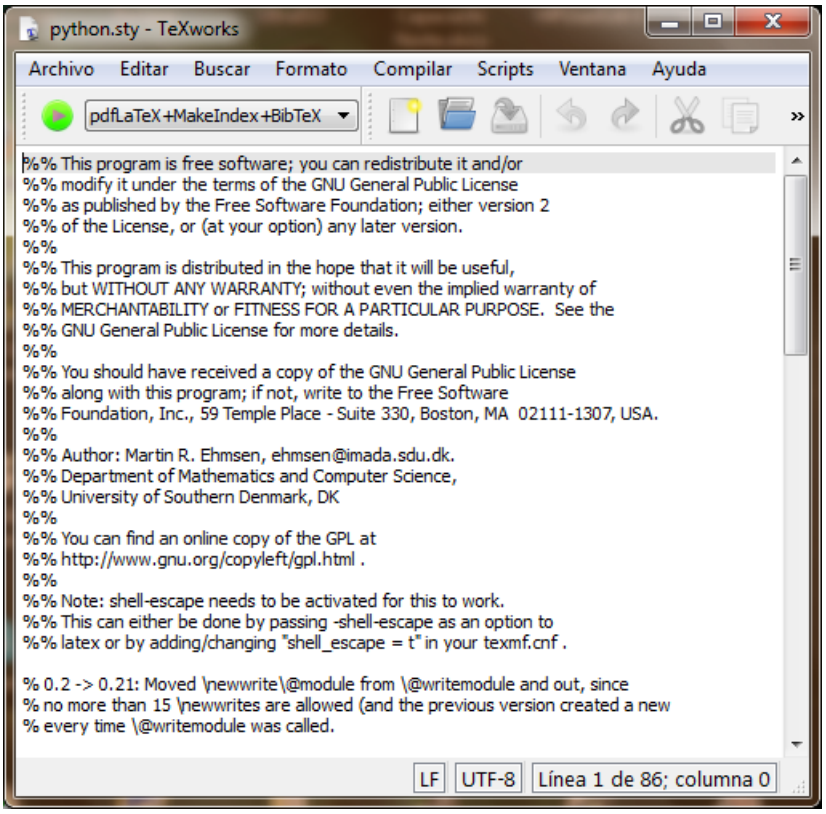
???? ????

1 Agregando python.sty

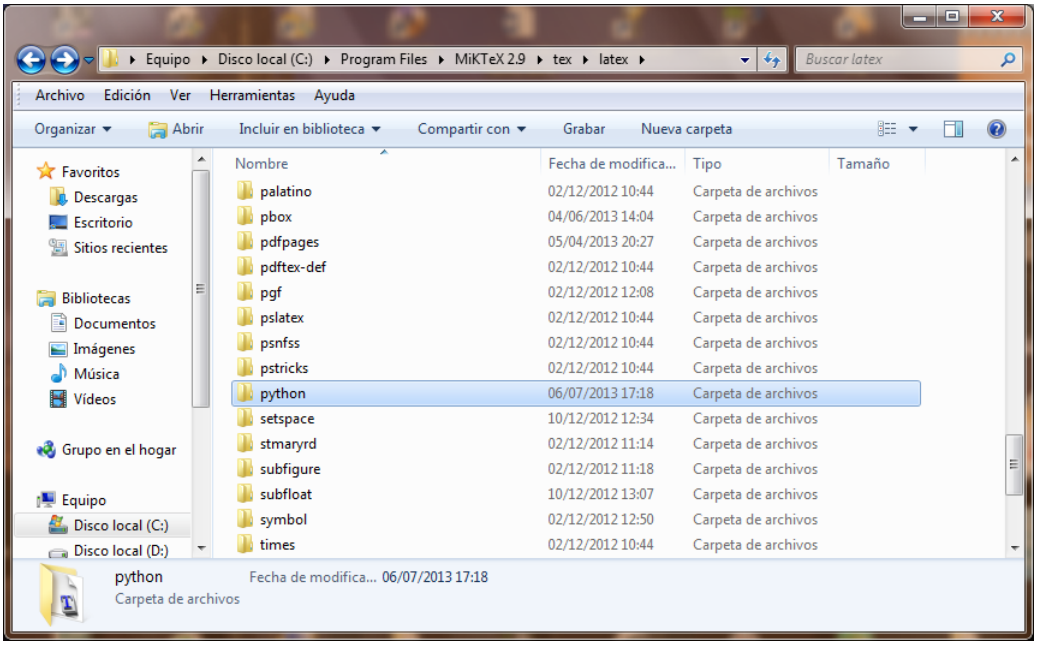
Para poder ejecutar código Python en LaTeX se debe habilitar *shell escape*:



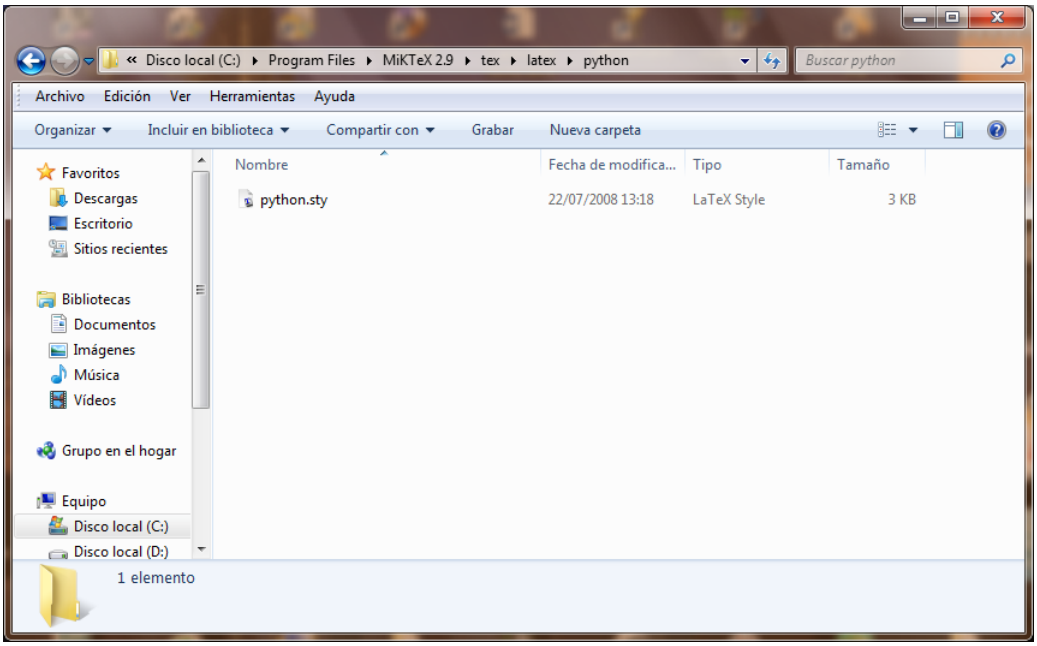
El archivo de estilo necesario es python.sty creado por Martin R. Ehmsen:



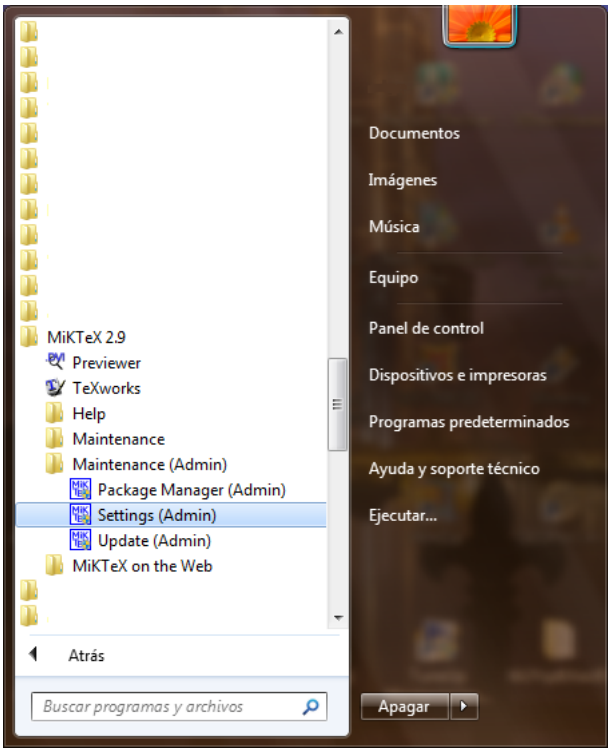
Crear una carpeta llamada python:

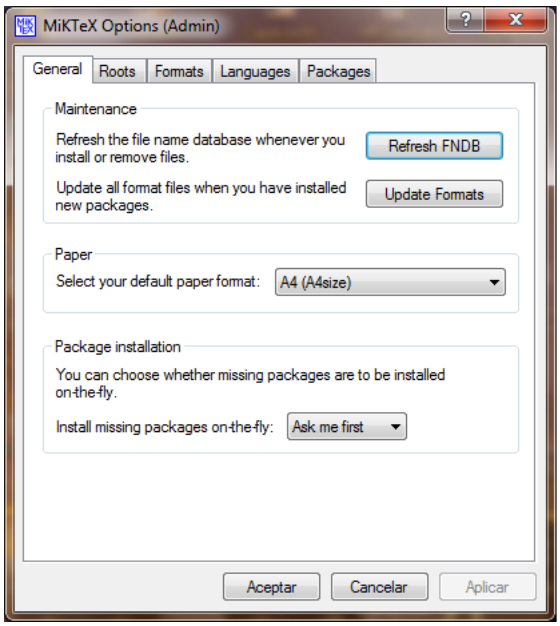


Copiar el archivo python.sty en la carpeta python:



Actualizar los archivos de MiKTeX:





2 Ejemplos simples

2.1 Impresión de números

Mostrando números del 0 al 100:

Programa 2.1:

```
for i in range(101):
    print i
```

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

```
\documentclass[10pt,letterpaper,final]{book}
\usepackage[utf8]{inputenc}
\usepackage[spanish]{babel}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage{python}
\begin{document}

\begin{python}
for i in range(101):
    print i
\end{python}

\end{document}
```

2.2 Impresión de texto

Mostrando el típico 'Hola mundo':

Programa 2.2:

```
print 'Hola mundo'
```

Hola mundo

```
\documentclass[10pt,letterpaper,final]{book}
\usepackage[utf8]{inputenc}
\usepackage[spanish]{babel}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage{python}
\begin{document}

\begin{python}
print 'Hola mundo'
\end{python}

\end{document}
```

2.3 Matrices

Usando Sympy:

Programa 2.3:

```
from sympy import Matrix, latex

A = Matrix([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
print latex(A, mode='inline')
print latex(A, mode='equation')
print latex(A, mode='equation*')
```

$\begin{bmatrix}1 & 2 & 3\\4 & 5 & 6\\7 & 8 & 9\end{bmatrix}$

$$\begin{bmatrix}1 & 2 & 3\\4 & 5 & 6\\7 & 8 & 9\end{bmatrix} \tag{2.1}$$

$$\begin{bmatrix}1 & 2 & 3\\4 & 5 & 6\\7 & 8 & 9\end{bmatrix}$$

```
\documentclass[10pt,letterpaper,final]{book}
\usepackage[utf8]{inputenc}
\usepackage[spanish]{babel}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
```

```
\usepackage{graphicx}
\usepackage{python}
\begin{document}

\begin{python}
from sympy import Matrix, latex

A = Matrix([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
print latex(A, mode='inline')
print latex(A, mode='equation')
print latex(A, mode='equation*')
\end{python}

\end{document}
```

2.4 Ecuaciones

Usando Sympy:

Programa 2.4:

```
from sympy import Symbol, Integral, latex

x = Symbol('x')

print latex(Integral(x**2, x), mode='inline')
print latex(Integral(x**2, x), mode='equation')
print latex(Integral(x**2, x), mode='equation*')
```

$\int x^2 dx$

$$\int x^2 dx \tag{2.2}$$

$$\int x^2 dx$$

```
\documentclass[10pt,letterpaper,final]{book}
\usepackage[utf8]{inputenc}
\usepackage[spanish]{babel}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage{python}
\begin{document}

\begin{python}
from sympy import Symbol, Integral, latex
```

```
x = Symbol('x')

print latex(Integral(x**2, x), mode='inline')
print latex(Integral(x**2, x), mode='equation')
print latex(Integral(x**2, x), mode='equation*')
\end{python}

\end{document}
```

2.5 Gráficos

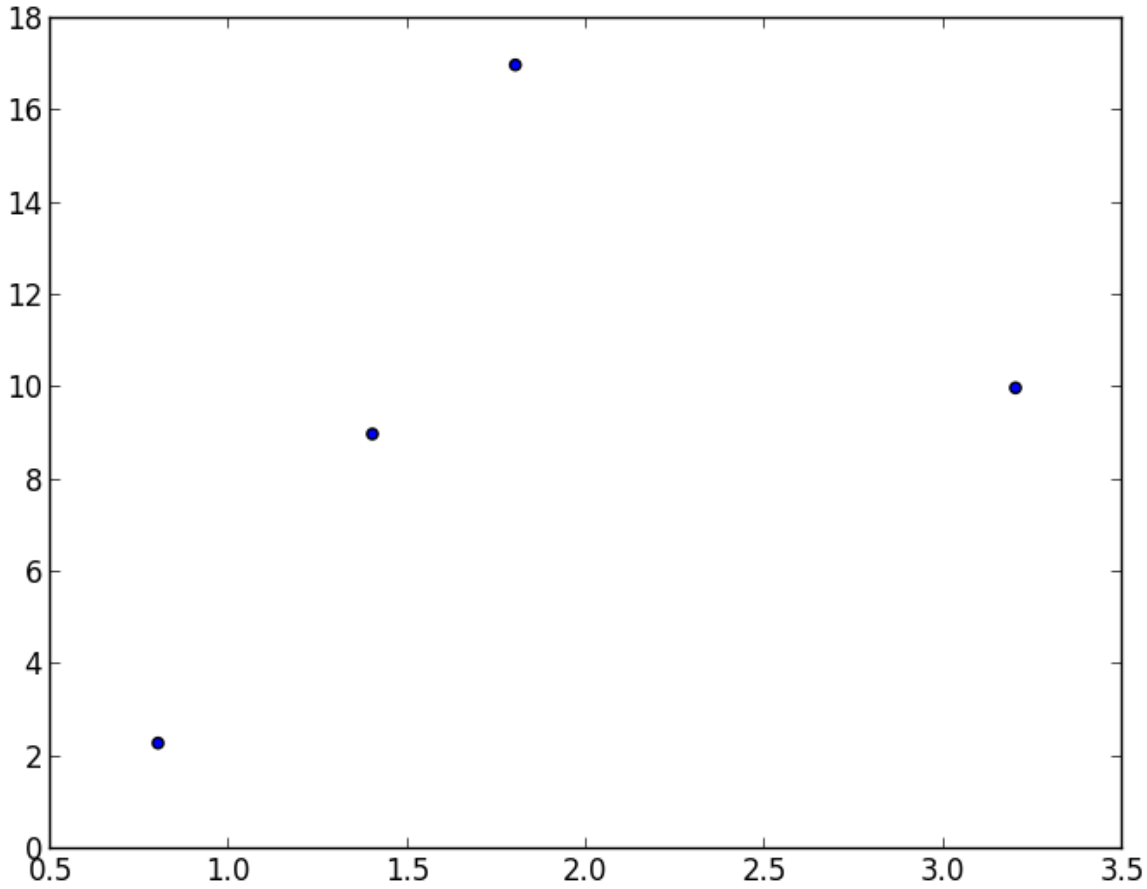
Usando Matplotlib y Numpy:

Programa 2.5:

```
import numpy as np
import matplotlib.pyplot as plt

xi = np.array([1.4, 0.8, 3.2, 1.8])
yi = np.array([9.0, 2.3, 10.0, 17.0])

plt.scatter(xi,yi)
plt.savefig('scatter.png')
```

```
\documentclass[10pt,letterpaper,final]{book}
\usepackage[utf8]{inputenc}
\usepackage[spanish]{babel}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage{python}
\begin{document}

\begin{python}
import numpy as np
import matplotlib.pyplot as plt

xi = np.array([1.4, 0.8, 3.2, 1.8])
yi = np.array([9.0, 2.3, 10.0, 17.0])

plt.scatter(xi,yi)
plt.savefig('scatter.png')
\end{python}
```

```
\includegraphics[scale=0.9]{scatter}

\end{document}
```



2.6 Tablas

Una tabla simple:

Programa 2.6:

```
print r'Tabla \LaTeX'
print
print r'\begin{tabular}{|c|c|c|}'
print r'\hline'
print r'Fecha & H$\ (m.)$ & Q $\ (m^{3}/seg)$ \\'
for i in range(30):
```

```
    print r'%2.3f & %2.3f & %2.3f \\' % (i, i, i)
print r'\hline'
print r'\end{tabular}'
```

Tabla LaTeX

Fecha	H $(m.)$	Q (m^3/seg)
0.000	0.000	0.000
1.000	1.000	1.000
2.000	2.000	2.000
3.000	3.000	3.000
4.000	4.000	4.000
5.000	5.000	5.000
6.000	6.000	6.000
7.000	7.000	7.000
8.000	8.000	8.000
9.000	9.000	9.000
10.000	10.000	10.000
11.000	11.000	11.000
12.000	12.000	12.000
13.000	13.000	13.000
14.000	14.000	14.000
15.000	15.000	15.000
16.000	16.000	16.000
17.000	17.000	17.000
18.000	18.000	18.000
19.000	19.000	19.000
20.000	20.000	20.000
21.000	21.000	21.000
22.000	22.000	22.000
23.000	23.000	23.000
24.000	24.000	24.000
25.000	25.000	25.000
26.000	26.000	26.000
27.000	27.000	27.000
28.000	28.000	28.000
29.000	29.000	29.000

```
\documentclass[10pt,letterpaper]{book}
\usepackage[utf8]{inputenc}
\usepackage[spanish]{babel}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage{python}

\begin{document}
```

```
\begin{python}
print r'Tabla \LaTeX'
print
print r'\begin{tabular}{|c|c|c|}'
print r'\hline'
print r'Fecha & H$\ (m.)$ & Q $\ (m^{3}/seg)$ \\'
for i in range(30):
    print r'%2.3f & %2.3f & %2.3f \\' % (i, i, i)
print r'\hline'
print r'\end{tabular}'
\end{python}

\end{document}
```