自定义宏包

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1 自定义宏

1.1 NewDocumentCommand

I eat Mouse.
I eat Fish.

One parameter: hello.
Two parameter3: Hello, world.

Text with 第一个必选参数 and perhaps -NoValue- and -NoValue-
Text with 第一个必选参数 and perhaps 第一个可选参数 and -NoValue-
Text with 第一个必选参数 and perhaps 第一个可选参数 and 第二个可选参数

1.2 NewDocumentEnvironment

```
This is #1:  dft1
This is #2:  dft2
This is #3:  第一个必选参数
```

```
This is #1:  第一个可选参数
This is #2:  dft2
This is #3:  第一个必选参数
```

```
This is #1:  dft1
This is #2:  第二个可选参数
This is #3:  第一个必选参数
```

```
This is #1:  第一个可选参数
This is #2:  第二个可选参数
This is #3:  第一个必选参数
```

1.3 新方式宏参数指定

参数指定	输入值	#1	#2	#3
m m	{foo}{bar}	foo	bar	
o m	{foo}	-Novalue	foo	
o o m	[foo]{bar}	foo	-Novalue-	bar
o o m	[foo][bar]Need	foo	bar	Need
O{dft1} O{dft2} m	{foo}	dft1	dft2	foo
m O{default}	{foo}	foo	default	
m O{default}	{foo}[bar]	foo	bar	
m O{default}	[bar]	报错		

2 宏定义进阶

2.1 (类似) 关键字参数:xargs

$$a = 2^2 + b^2 = c^2 \tag{1}$$
$$3^2 + 4^2 = 5^2 \tag{2}$$
$$a = 2^2 + d^2 = c^2 \tag{3}$$
$$a = 2^2 + b^2 = g^2 \tag{4}$$

2.2 条件判断:xifthen

Testing \optarg:
Testing \optarg[]:
Testing \optarg[test]: (((test)))

2.3 宏包可选参数

Option 选择命令的使用: `\usepackage[test]{Article}`
Hello world

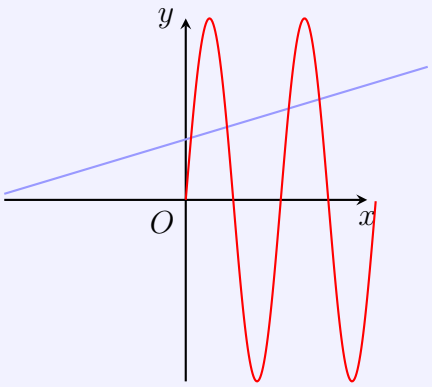
3 重写绘图宏包

3.1 重写 plott 命令

原始代码:

```
\begin{Plot}{scale=0.8}{>=stealth}
    \plott{blue!40, thick}{-1:4}{\x*\x-2*\x-1}
    \plott{red, thick}{0:pi}{3*sin(\x r)}
\end{Plot}
```

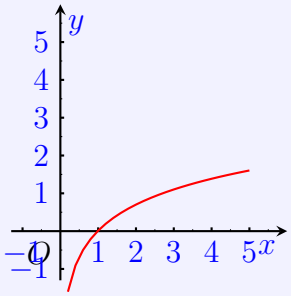
运行结果:



简化后代码:

```
\plot{exp(-\x)*sin(2*\x)+ln(\x)*cos(\x)}[0:4]
```

运行结果:

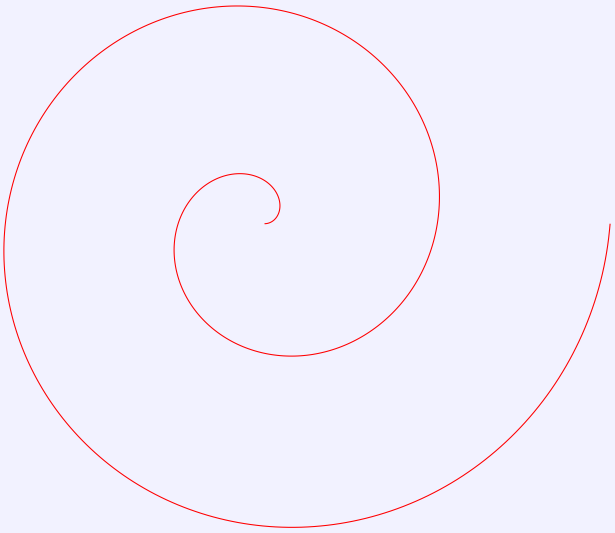


3.2 重写 polarplott

原始代码:

```
\polarplott{scale=2}{red, domain=0:720}{0.01/pi*\t}
```

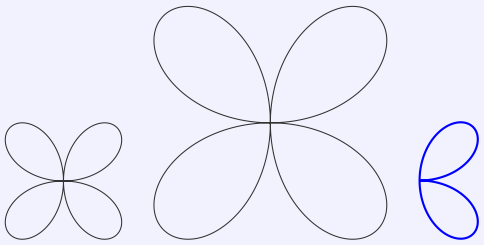
运行结果:



简化后代码:

```
\polarplot{sin(2*\t)}
\polarplot[scale=2]{sin(2*\t)}
\polarplot[][blue, thick, domain=0:180]{sin(2*\t)}
```

运行结果:

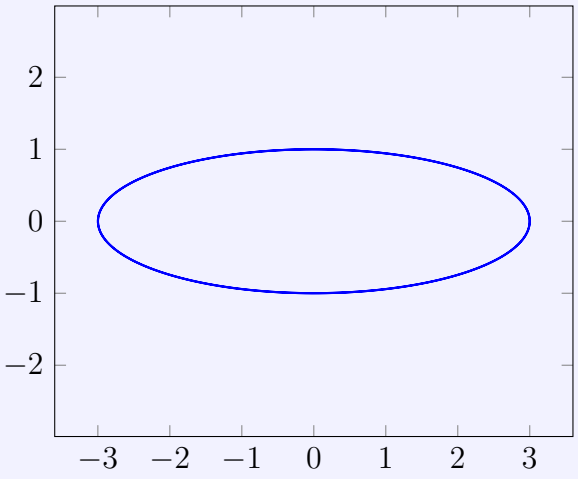


3.3 重写 paraplott(绘制二维参数方程)

原始代码:

```
\paraplott{scale=1}{{10*cos(t)}, {sin(t)}}{thick, color=blue}{}
```

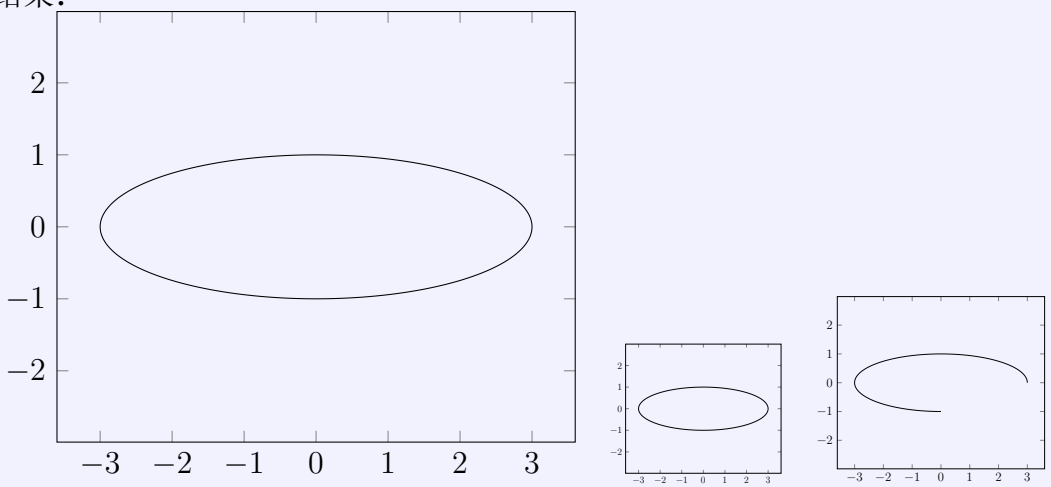
运行结果:



简化后代码:

```
\paraplot{{3*cos(t)}, {sin(t)}}
\paraplot[scale=0.3]{{3*cos(t)}, {sin(t)}}
\paraplot[scale=0.3]{{3*cos(t)}, {sin(t)}}[0:1.5*pi]
```

运行结果:

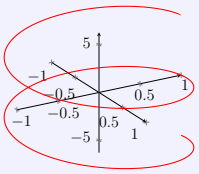


3.4 重写 paraplotzz(绘制三维参数方程)

原始代码：

```
\paraplotzz{scale=0.5}
    {{sin(deg(t))},{cos(deg(t))},{t}}
    {}
    {view = {60}{90},axis lines = center}
```

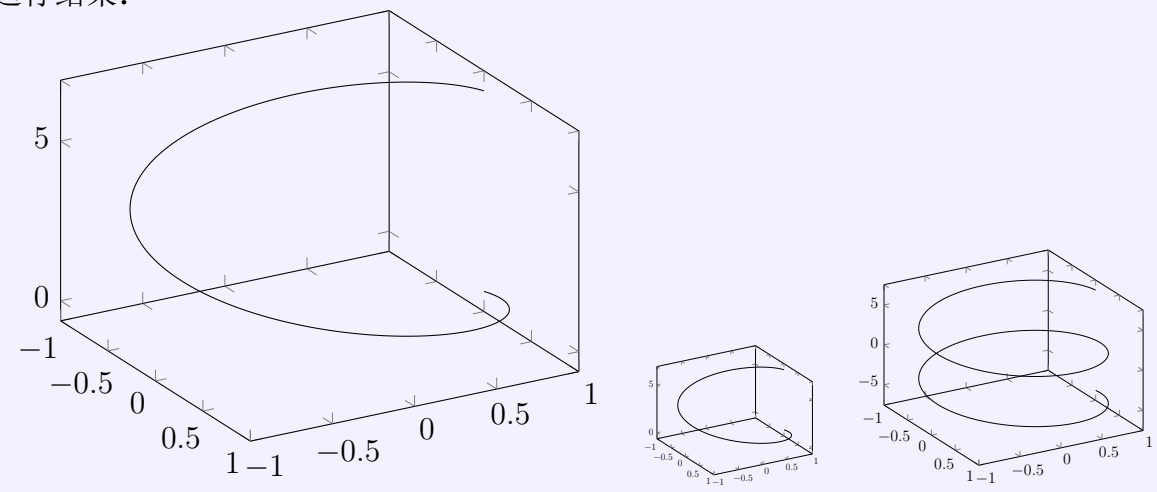
绘制结果



简化后代码:

```
\paraplotz{{sin(deg(t))}, {cos(deg(t))}}
\paraplotz[scale=0.3]{{sin(deg(t))}, {cos(deg(t))}}
\paraplotz[scale=0.5]{{sin(deg(t))}, {cos(deg(t))}}[-2*pi:2*pi]
```

运行结果：

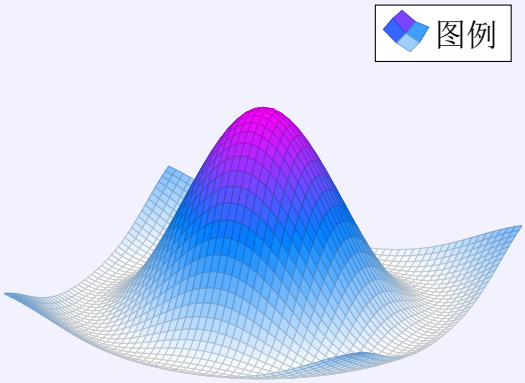


3.5 重写 plotzz(三维绘图)

原始代码：

```
\plotzz{}{sin(deg(sqrt(x^2+y^2)))/sqrt(x^2+y^2)}{surf}{}{图例}
```

运行结果:



简化后代码:

```
\plotz[scale=1.5]{sin(deg(sqrt(x^2+y^2)))/sqrt(x^2+y^2)}[mesh]
```

运行结果：