

Résultats avec Scilab

1. Les constantes

```
-->%e
```

```
%e =
```

```
2.7182818
```

```
-->%pi
```

```
%pi =
```

```
3.1415927
```

```
-->(%i)^2
```

```
ans =
```

```
- 1.
```

```
-->%eps
```

```
%eps =
```

```
2.220D-16
```

```
-->%t
```

```
%t =
```

```
T
```

```
-->%f
```

```
%f =
```

```
F
```

```
-->sin(%pi)
```

```
ans =
```

```
1.225D-16
```

```
-->ln(%e)
```

```
!--error 4
```

```
undefined variable : ln
```

```
-->log(%e)
```

```
ans =
```

```
1.
```

```
-->abs(%i)
```

```
ans =
```

```
1.
```

```
-->sqrt(%i)
```

ans =

0.7071068 + 0.7071068i

-->sqrt(2*%i)

ans =

1. + i

-->j=exp(%i)

j =

0.5403023 + 0.8414710i

-->real(j)

ans =

0.5403023

-->imag(j)

ans =

0.8414710

2. les vecteurs

```
-->suite=1:7  
suite =
```

```
1. 2. 3. 4. 5. 6. 7.
```

```
-->suite'  
ans =
```

```
1.  
2.  
3.  
4.  
5.  
6.  
7.
```

```
-->rand(1,2)  
ans =
```

```
0.2113249 0.7560439
```

3. Les matrices

```
-->rand(3,2)
```

```
ans =
```

```
0.0002211 0.6283918  
0.3303271 0.8497452  
0.6653811 0.6857310
```

```
-->z=rand(3,2)
```

```
z =
```

```
0.8782165 0.6623569  
0.0683740 0.7263507  
0.5608486 0.1985144
```

```
-->size(z)
```

```
ans =
```

```
3. 2.
```

```
-->z(2,1)
```

```
ans =
```

```
0.0683740
```

```
-->v*un'
```

```
ans =
```

```
0.4527735
```

```
-->C=rand(3,3)
```

```
C =
```

```
0.0500420 0.6084526 0.8279083  
0.7485507 0.8544211 0.9262344  
0.4104059 0.0642647 0.5667211
```

```
-->C(1:2,2:3)
```

```
ans =
```

```
0.6084526 0.8279083  
0.8544211 0.9262344
```

```
-->C($,:)
```

```
ans =
```

```
0.4104059 0.0642647 0.5667211
```

```
-->b=rand(3,1)
```

```
b =
```

```
0.5711639
```

```
0.8160110
```

```
0.0568928
```

```
-->x=C\b, C*x
```

```
x =
```

```
0.0139620
```

```
0.9633731
```

```
- 0.0189655
```

```
ans =
```

```
0.5711639
```

```
0.8160110
```

```
0.0568928
```

4. Les polynômes

```
-->p=poly([-1,1],'x')  
p =
```

$$x^2 - 1$$

```
-->p=poly([1:5],'x','c')  
p =
```

$$x^5 + 2x^4 + 3x^3 + 4x^2 + 5x + 1$$

```
-->p=poly([-1 0 1],'x')  
p =
```

$$x^3 - x$$

```
-->t=0:0.1:%pi;plot(t,sin(t))
```

```
-->t=-2:1:2;plot(t,horner(p,t))
```

```
-->t=-2:0.1:2;plot(t,horner(p,t))
```

```
-->xbasc
```

```
-->t=-2:0.1:2;plot(t,horner(p,t))
```

5. Boucles

```
-->a=1;for i=1:52; a=a*i; end; a
```

a =

8.066D+67

```
-->a=2; while (exp(a) < a^10); a=a+1; end; a
```

a =

36.

Vérification:

```
-->exp(35), 35^10, exp(36), 36^10
```

ans =

1.586D+15

ans =

2.759D+15

ans =

4.311D+15

ans =

3.656D+15

```
-->a=2; while (exp(a) < a^100); a=a+1; end; a
```

a =

648.

```
-->exp(647), 647^100, exp(648), 648^1000
```

ans =

9.739+280

ans =

1.231+281

ans =

2.647+281

ans =

Inf

Pour la puissance 1000 le résultat de cette boucle est fausse, (dépassement de capacité)

```
-->a=2; while (exp(a) < a^1000); a=a+1; end; a
a =

710.
```

```
-->exp(709), 709^1000, exp(710), 710^1000
ans =
```

```
8.218+307
ans =
```

```
Inf
ans =
```

```
Inf
ans =
```

```
Inf
```

on passe donc au log.

```
-->a=2; while ( a < log(a)*100); a=a+1; end; a
a =
```

```
648.
```

```
-->a=2; while ( a < log(a)*1000); a=a+1; end; a
a =
```

```
9119.
```

```
-->deff('[y]=F(x)', 'y=(x/exp(1))^x*sqrt(2*%pi*x)')
```

Attention: redéfinition de la fonction: F

. Utilisez funcprot(0) pour éviter ce message

```
-->F(52)
ans =
```

```
8.053D+67
```

C'est bien 52!

```
function [y]=G(x)
y=(x/exp(1))^x*sqrt(2*%pi*x)
endfunction
```



```
-->G(2)  
ans =
```

1.9190044

```
-->G(52)  
ans =
```

8.053D+67

7 Exercices

```
-->t=0:0.1:2*%pi;xbasc;plot(sin(t),cos(t))
```

```
-->t=0:100;xbasc;plot(sin(t),cos(t))
```

```
-->t=0:10;xbasc;plot(sin(t),cos(t),'x')
```

```
-->t=0:100;xbasc;plot(sin(t),cos(t),'x')
```

```
-->t=0:1000;xbasc;plot(sin(t),cos(t),'x')
```

les lapins de Fibonacci

```
-->u=1;v=1;i=1; while v <5 ; aux=u+v; u=v; v=aux; i=i+1; end; i  
i =
```

4.

```
-->u=1;v=1;i=1; while v <1000 ; aux=u+v; u=v; v=aux; i=i+1; end; i  
i =
```

16.

```
-->u=1;v=1;i=1; while v <10^9 ; aux=u+v; u=v; v=aux; i=i+1; end; i  
i =
```

44.

Le dessin impossible, Pourquoi ????

```
-->deff('[y]=f(x)', 'y=x^a.*log(x)')
```

Attention: redéfinition de la fonction: f

. Utilisez funcprot(0) pour éviter ce message

```
-->h=0.1;t=h:h:1;xbasc;plot(t,f(t))
```

```
-->h=0.0001;t=h:h:1;xbasc;plot(t,t^(0.1).*log(t)); f(h)  
ans =
```

- 3.6667025

```
-->h=10^(-5);t=h:h:10^3*h;xbasc;plot(t,t^(0.1).*log(t)); f(h)  
ans =
```

- 3.6407067

```
-->h=10^(-10);t=h:h:10^3*h;xbasc;plot(t,t^(0.1).*log(t)); f(h)  
ans =
```

- 2.3025851

```
-->A=rand(3,3)  
A =
```

0.6653811	0.6857310	0.5608486
0.6283918	0.8782165	0.6623569
0.8497452	0.0683740	0.7263507

```
-->max(A)  
ans =
```

0.8782165

```
-->[m,k]=max(A)  
k =
```

2. 2.

m =

0.8782165