

TP 5 MAPLE - Sistemas de ecuaciones

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1 Comandos MAPLE

1.1 Sistemas lineales

```
with(LinearAlgebra);  
A := Matrix([[1, 2, 3], [0, 3, 4], [1, 0, 5]]);  
Determinant(A);  
b := Vector([1, 2, 3]);  
1/A.b;  
LinearSolve(A, b);  
LinearSolve(A, b, method = 'LU');
```

```
A := Matrix([[1, 2, 3], [3, 4, 5]]);  
b := Vector([1, 1]);  
LinearSolve(A, b, free = 's');  
LeastSquares(A, b, free = 's');
```

```
A := Matrix([[1, 2, 3], [3, 4, 5], [0, 2, 3], [0, 2, 3]]);  
b := Vector([1, 2, 1, 1]);  
LinearSolve(A, b, free = 's');  
x := LeastSquares(A, b);  
A.x;
```

```
A := Matrix([[1, 2, 3], [3, 4, 5], [0, 2, 3], [5, 2, 3]]);  
b := Vector([1, 2, 1, 3]);  
x := LeastSquares(A, b);  
evalf(A.x-b);
```

1.2 Sistemas no lineales

```
restart;  
f := x^2+x-6;  
plot(f, x = 1 .. 3);  
with(Student[NumericalAnalysis]);  
  
Bisection(f, x = [1, 3], tolerance = 10^(-5));
```

```
Bisection(f, x = [1, 3], tolerance = 10-5, output = animation);
```

```
Newton(f, x = 1, tolerance = 10-5);
```

```
Newton(f, x = 1, tolerance = 10-5, output = animation);
```

```
Secant(f, x = [1, 3], tolerance = 10-5);
```

```
Secant(f, x = [1, 3], tolerance = 10-5, output = animation);
```

1.3 Un poco de optimizacion

```
with(Optimization);
```

```
f := proc (x) if x < 0 then x2 else sin(x) end if end proc;
```

```
NLPSolve(f, -Pi .. Pi);
```