Mathematica Quick Start

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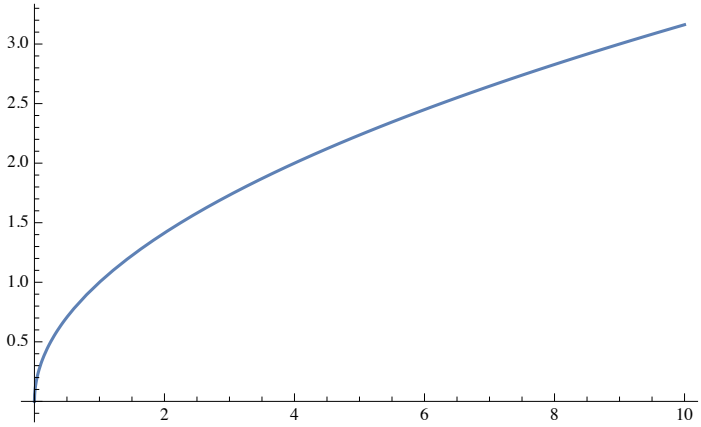
Gráficos

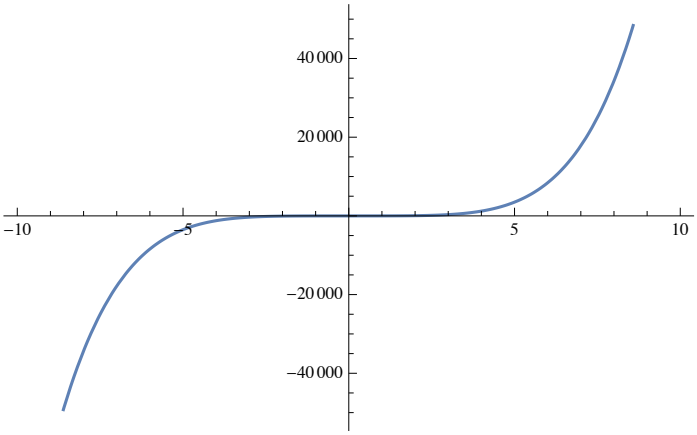
Para los gráficos se utiliza el comando Plot. Para graficar la función $\sqrt{x}$, por ejemplo

```
Plot[Sqrt[x], {x, 0, 10}]
```



El ejemplo muestra el gráfico para los valores de x desde 0 a 10, que se indican entre corchetes "**{x, 0, 10}**". Por ejemplo el polinomio $x^5 + 3x^3 - 3$:

```
Plot[x^5 + 3 x^3 - 3, {x, -10, 10}]
```



Cálculo de Límites

Por ejemplo calculemos el límite de $\frac{x-1}{x^2-1}$ cuando $x \to 1$ (Ejemplo 1 sección 2.2)

In[31]:=
```
Limit[(x - 1) / (x^2 - 1), x -> 1]
```

Out[31]= $\frac{1}{2}$

Para hacerlo numéricamente por la derecha

In[36]:=
```
Table[(x - 1) / (x^2 - 1), {x, 1.5, 1, -0.01}] // TableForm
```

Power: Infinite expression $\frac{1}{0.}$ encountered.

Infinity: Indeterminate expression 0. ComplexInfinity encountered.

Out[36]//TableForm=

```
0.4
0.401606
0.403226
0.404858
0.406504
0.408163
0.409836
0.411523
0.413223
0.414938
0.416667
0.41841
0.420168
0.421941
0.423729
0.425532
0.42735
0.429185
0.431034
0.4329
0.434783
0.436681
0.438596
0.440529
0.442478
0.444444
0.446429
0.44843
0.45045
0.452489
0.454545
0.456621
0.458716
0.460829
0.462963
0.465116
0.46729
0.469484
0.471698
0.473934
0.47619
0.478469
0.480769
0.483092
0.485437
0.487805
0.490196
0.492611
0.49505
0.497512
Indeterminate
```

por la izquierda

In[37]:=
```
Table[(x - 1) / (x^2 - 1), {x, 0, 1, 0.01}] // TableForm
```

Power: Infinite expression $\frac{1}{0.}$ encountered.

Infinity: Indeterminate expression 0. ComplexInfinity encountered.

Out[37]//TableForm=

```
1.
0.990099
0.980392
0.970874
0.961538
0.952381
0.943396
0.934579
0.925926
0.917431
0.909091
0.900901
0.892857
0.884956
0.877193
0.869565
0.862069
0.854701
0.847458
0.840336
0.833333
0.826446
0.819672
0.813008
0.806452
0.8
0.793651
0.787402
0.78125
0.775194
0.769231
0.763359
0.757576
0.75188
0.746269
0.740741
0.735294
0.729927
0.724638
0.719424
0.714286
0.70922
0.704225
0.699301
0.694444
0.689655
0.684932
0.680272
0.675676
0.671141
0.666667
0.662252
0.657895
0.653595
0.649351
0.645161
0.641026
```

```
0.636943
0.632911
0.628931
0.625
0.621118
0.617284
0.613497
0.609756
0.606061
0.60241
0.598802
0.595238
0.591716
0.588235
0.584795
0.581395
0.578035
0.574713
0.571429
0.568182
0.564972
0.561798
0.558659
0.555556
0.552486
0.549451
0.546448
0.543478
0.540541
0.537634
0.534759
0.531915
0.529101
0.526316
0.52356
0.520833
0.518135
0.515464
0.512821
0.510204
0.507614
0.505051
0.502513
Indeterminate
```