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Part I

Sympy Demo

importer sympy:

In [1]:
```
from sympy import *
```

x sættes til at være et symbol:

In [2]:
```
x = Symbol('x')
```

Definer f(x):

x**2 betyder x^2

In [3]:
```
def f(x):
    return a*x**2 + b*x + c
```

Definer a, b og c:

In [4]:
```
a, b, c = 1, 2, -3
```

Vis f(x):

In [5]:
```
f(x)
```

Out [5]:
```
x**2 + 2*x - 3
```

Ser lidt grimt ud, prøv init_printing() for pænere output:

In [6]:
```
init_printing()
```

Vis f(x) igen:

In [7]:
```
f(x)
```

Out [7]:

$$x^2 + 2x - 3$$

Løs f(x):

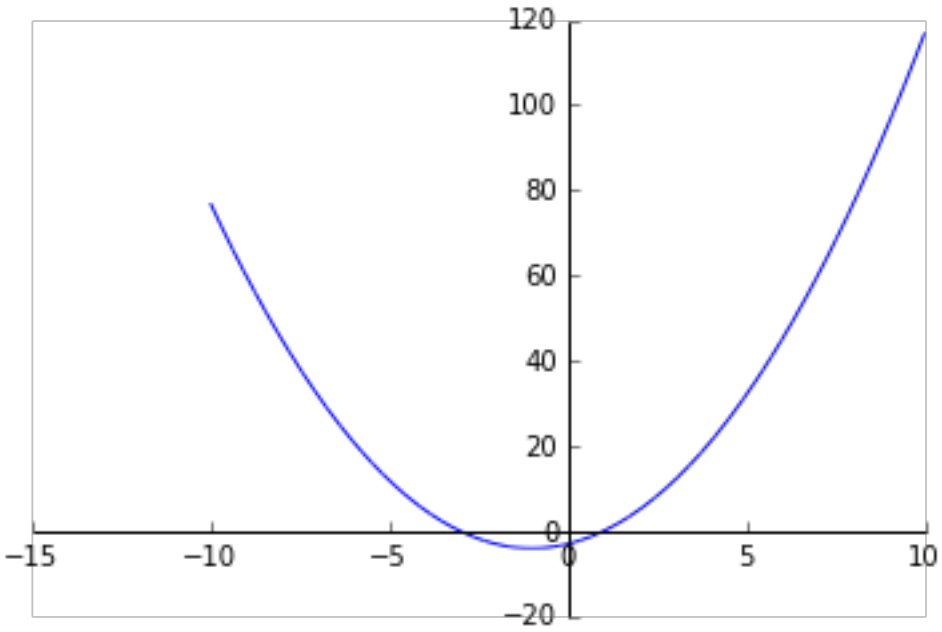
In [8]:
```
solve(f(x), x)
```

Out [8]:

$$[-3, \quad 1]$$

Plot f(x):

In [9]:
```
plot(f(x))
```



Out [9]:

```
<sympy.plotting.plot.Plot at 0x7f0b468aed10>
```

Differencer f(x):

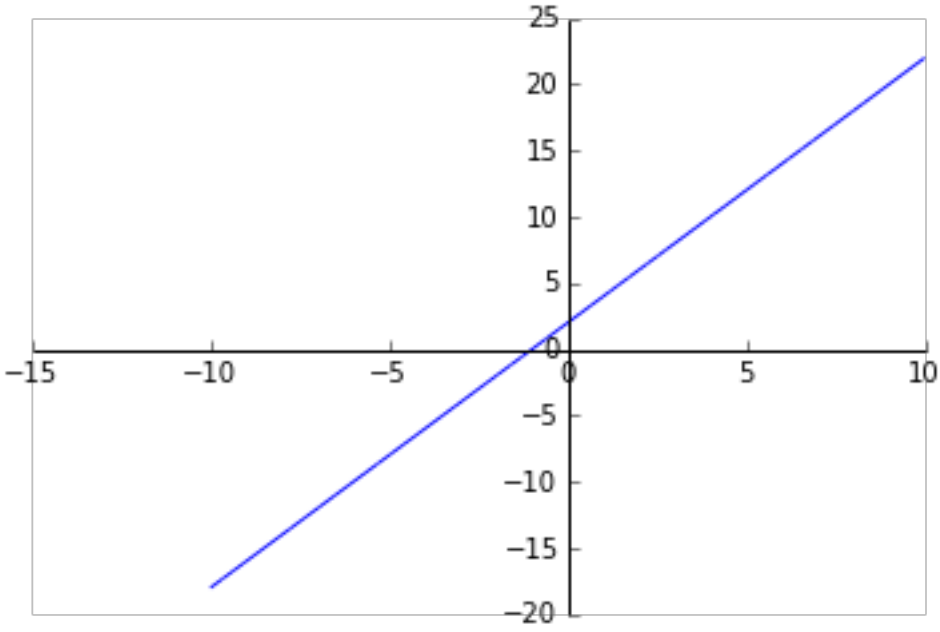
In [10]:
```
diff(f(x))
```

Out [10]:

$$2x + 2$$

Plot den afledte af f(x):

In [11]:
```
plot(diff(f(x)))
```



Out [11]:

```
<sympy.plotting.plot.Plot at 0x7f0b468c5c10>
```

Definer g(x) som stamfunktionen til f(x):

In [12]:

```
def g(x):
    return integrate(f(x))
```

Vis g(x):

In [13]:

```
g(x)
```

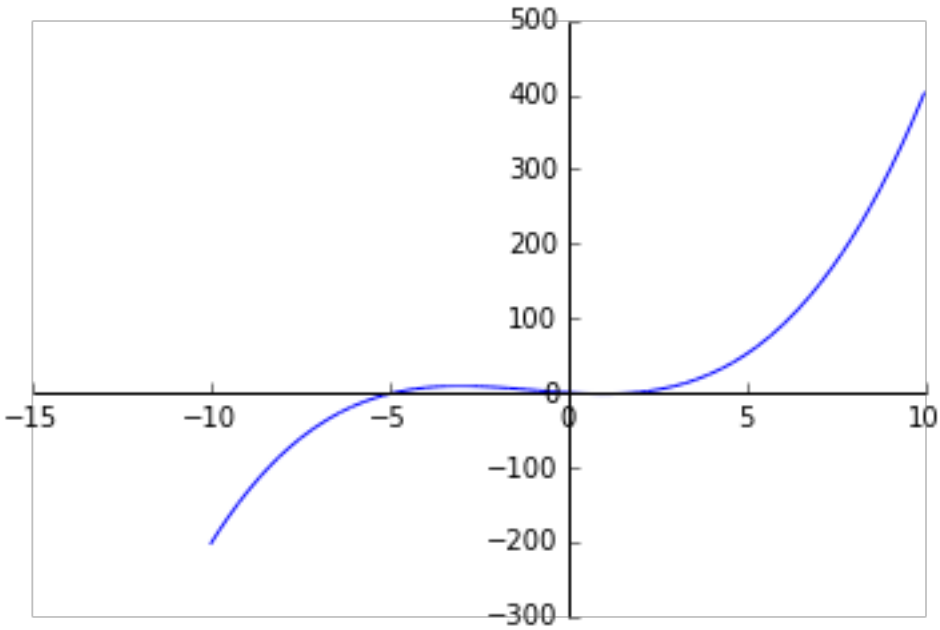
Out [13]:

$$\frac{x^3}{3} + x^2 - 3x$$

plot g(x):

In [14]:

```
plot(g(x))
```



Out [14]:

```
<sympy.plotting.plot.Plot at 0x7f0b466d69d0>
```

Hvis der er sådan noget du leder efter der en introduktion her:

http://nbviewer.ipython.org/github/jrjohansson/scientific-python-lectures/tree/master/

Starten med hvilken brugerflader der kan benyttes etc.

Der er også nogle eksempler her:

http://nbviewer.ipython.org/github/jrjohansson/scientific-python-lectures/blob/master/Lecture-5-Sympy.ipynb

Selve dokumentet kan konverteres til latex og vider til PDF med kommandoen:

ipython nbconvert –to latex –post PDF Marie.ipynb