Use_PY_in_Calculus

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1 Use PY in Calculus

1.1 What is Function

functionsxf(x)
domianrangex

1.1.1 polynomials

$f(x) = x^3 - 5^2 + 9 \;\; x \to \infty \; f(x) \to -\infty \; x \to \infty \; f(x) \to \infty \; R$

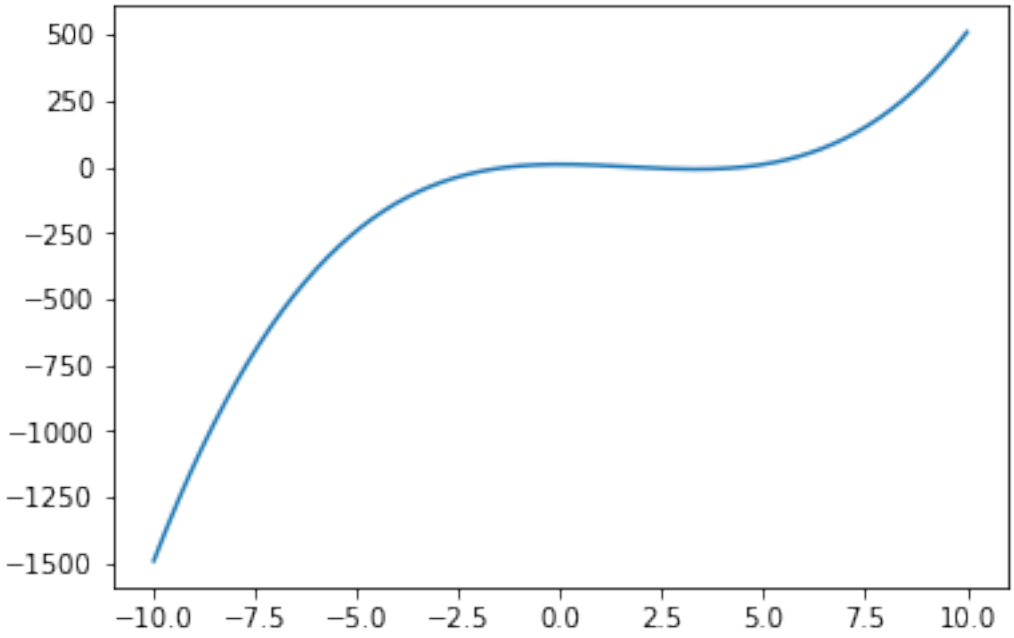
```
In [1]: def f(x):
            return x**3 - 5*x**2 + 9

        print(f(1), f(2))
```

```
5 -3
```

```
In [3]: import numpy as np
        import matplotlib.pyplot as plt
        x = np.linspace(-10,10,num = 1000)
        y = f(x)
        plt.plot(x,y)
```

```
Out[3]: [<matplotlib.lines.Line2D at 0x6f6a6270>]
```



1.1.2 Exponential Functions

$exp(x) = e^x$ domain is $-\infty, \infty)$,range is $(0, \infty)$ py e

```
In [4]: def exp(x):
            return np.e**x

        print("exp(2) = e^2 = ",exp(2))
```

```
exp(2) = e^2 =  7.3890560989306495
```

numpy np.e**x

```
In [5]: def eexp(x):
            return np.e**(x)

        print("exp(2) = e^2 = ",eexp(2))
```

```
exp(2) = e^2 =  7.3890560989306495
```

```
In [57]: plt.plot(x,exp(x))
```

```
Out[57]: [<matplotlib.lines.Line2D at 0x1137944a8>]
```