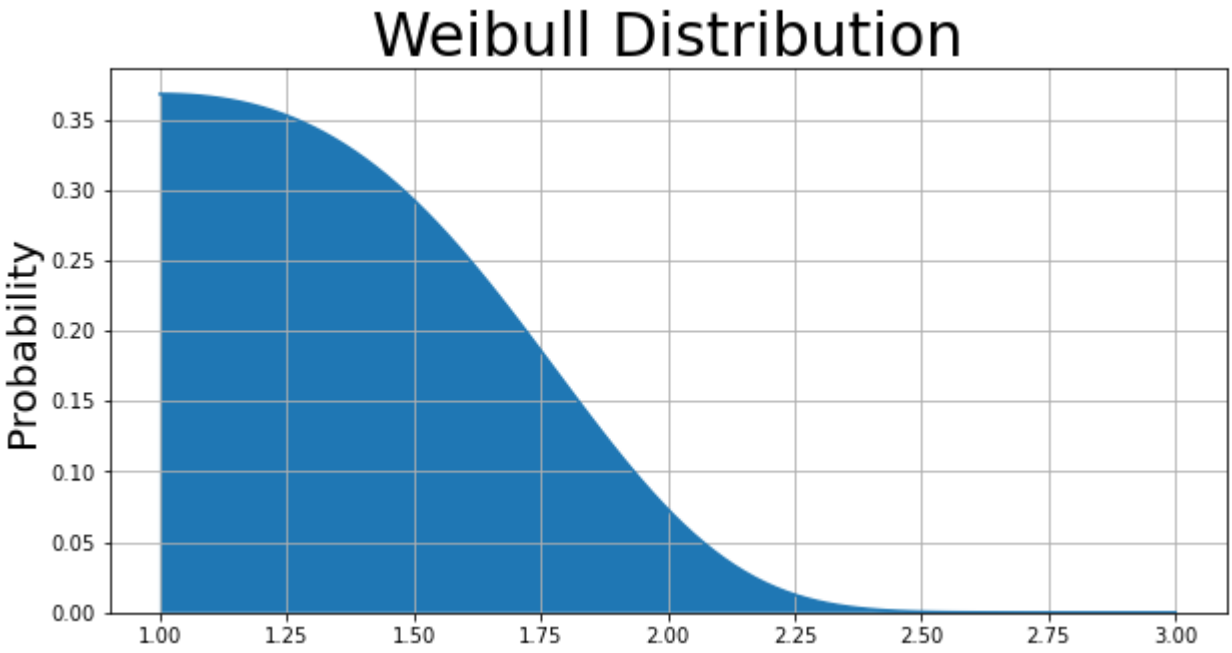
# Welcome to Jupyter!

In [4]:
```
import numpy as np
import matplotlib.pyplot as plt
from numpy.core.fromnumeric import size
#use This Command If tabulate is not installed
#import sys
#!{sys.executable} -m pip install tabulate
from tabulate import tabulate
```

In [5]:
```
# For Graphical  Representation
x2= np.linspace(1,3,100)
r2= np.linspace(1,3,100)
ro = -x2**r2
simp=((r2)*((x2)**(r2-1)))*(np.exp(ro))
fig , a = plt.subplots(figsize=(10,5))
plt.grid()
a.plot(r2,simp)
plt.fill_between(r2,simp)
a.set_ylim(0)
a.set_title('Weibull Distribution',size='30')
a.set_ylabel('Probability',size='20')
plt.show()
```




In [6]:
```
def weibullDistribution(x,r):
    # we are using standard weibull distribution that's why a will be 1 and U will be 0
    # r*x**(r-1)*np.exp(-(x**r))
    ro = -x**r
    return ((r)*((x)**(r-1)))*(np.exp(ro))


def Simpson38(a,b,h):
    xi = []
```

```
    yi = []
    r= np.linspace(h,b,n+1)

    for i in range(0,n+1):
        x = x0 +i*h

        xi.append(x)
        if (x >0):
            y = weibullDistribution(xi[i],r[i])
        else :
            print("The Value Of X must be greater then 0")
        yi.append(y)
    for i in range(len(yi)):
        table = [ ['R% d'%(i),'X% d'%(i),'Y% d'%(i)],[r[i],xi[i],yi[i]]]
        print("\n")
        print(tabulate(table))


    formula= weibullDistribution(a,r[0]) + weibullDistribution(b,r[n])
    for i in range(1, n):
        if (i % 3 == 0):
            formula = formula + 2 * yi[i]
        else:
            formula = formula + 3 * yi[i]
    result = ((3*h)/8)*formula

    print('The Value Of The Integral Is F(x)= %0.6f'%(result))
```

In [7]:

```
print("Enter The Value Of Lower Limit")
a = float(input())
print("Enter The Value Of Upper Limit")
b = float(input())
print("Enter The Value Of N")
n = int(input())
h = (b-a)/n
x0 = a
```

```
Enter The Value Of Lower Limit
1
Enter The Value Of Upper Limit
3
Enter The Value Of N
100
```

In [8]:

```
simpsonshort=Simpson38(a,b,h)
```

```
----  ---  --------------------
R 0   X 0  Y 0
0.02  1.0  0.007357588823428847
----  ---  --------------------


------  ----  --------------------
R 1     X 1   Y 1
0.0498  1.02  0.017961163979231937
------  ----  --------------------


------  ----  -------------------
```

```
R 2     X 2   Y 2
0.0796  1.04  0.02815678909791506
------  ----  ------------------


------------------  ----  ------------------
R 3                 X 3   Y 3
0.10940000000000001  1.06  0.03796716171559986
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------  ----  ------------------
R 4     X 4   Y 4
0.1392  1.08  0.04741284186168004
------  ----  ------------------


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R 5                 X 5  Y 5
0.16899999999999998  1.1  0.05651228856901894
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------  ----  ------------------
R 6     X 6   Y 6
0.1988  1.12  0.06528190534524438
------  ----  ------------------


------  ----------------  ------------------
R 7     X 7               Y 7
0.2286  1.1400000000000001  0.07373609118834504
------  ----------------  ------------------


------  ----  ------------------
R 8     X 8   Y 8
0.2584  1.16  0.08188729468236099
------  ----  ------------------


------  ----  ------------------
R 9     X 9   Y 9
0.2882  1.18  0.08974606946392363
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R 10   X 10  Y 10
0.318  1.2   0.09732112995103205
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R 11    X 11  Y 11
0.3478  1.22  0.10461940670586486
------  ----  ------------------


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R 12                X 12  Y 12
0.37760000000000005  1.24  0.1116461011904288
------------------  ----  ------------------
```

```
------------------  ----  ------------------
R 13                X 13  Y 13
0.4074000000000004  1.26  0.11840473998841913
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R 14                X 14  Y 14
0.4372000000000003  1.28  0.12489722882515168
------------------  ----  ------------------


-----  ----  -----------------
R 15   X 15  Y 15
0.467  1.3   0.131123906932405
-----  ----  -----------------


------  ----  ------------------
R 16    X 16  Y 16
0.4968  1.32  0.13708360248606125
------  ----  ------------------


------------------  ----  ------------------
R 17                X 17  Y 17
0.5266000000000001  1.34  0.14277368999863477
------------------  ----  ------------------


------  ----------------  ------------------
R 18    X 18              Y 18
0.5564  1.3599999999999999  0.14819015068116814
------  ----------------  ------------------


------  ----  ------------------
R 19    X 19  Y 19
0.5862  1.38  0.15332763690284776
------  ----  ------------------


-----  ----  ----------------
R 20   X 20  Y 20
0.616  1.4   0.1581795419738486
-----  ----  ----------------


------  ----  ------------------
R 21    X 21  Y 21
0.6458  1.42  0.16273807655783373
------  ----  ------------------


------  ----  ------------------
R 22    X 22  Y 22
0.6756  1.44  0.16699435308449964
------  ----  ------------------


------  ----  ------------------
R 23    X 23  Y 23
0.7054  1.46  0.17093847957775546
------  ----  ------------------
```

```
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R 24                X 24  Y 24
0.7352000000000001  1.48  0.17455966433872544
------------------  ----  -------------------


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R 25   X 25  Y 25
0.765  1.5   0.17784633292095153
-----  ----  -------------------


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R 26                X 26  Y 26
0.7948000000000001  1.52  0.18078625880324894
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------  ----  -------------------
R 27    X 27  Y 27
0.8246  1.54  0.18336670909806546
------  ----  -------------------


------  ----  -------------------
R 28    X 28  Y 28
0.8544  1.56  0.18557460652360774
------  ----  -------------------


------  ----  -------------------
R 29    X 29  Y 29
0.8842  1.58  0.18739670870948116
------  ----  -------------------


-----  ----  -------------------
R 30   X 30  Y 30
0.914  1.6   0.18881980569071402
-----  ----  -------------------


------  ----  -------------------
R 31    X 31  Y 31
0.9438  1.62  0.1898309361661385
------  ----  -------------------


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R 32    X 32                Y 32
0.9736  1.6400000000000001  0.19041762274653556
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R 33    X 33                Y 33
1.0034  1.6600000000000001  0.1905681259885081
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R 34                X 34                Y 34
1.0332000000000001  1.6800000000000002  0.19027171649539543
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```

```
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R 35   X 35                Y 35
1.063  1.7000000000000002  0.1895189637618301
-----  ------------------  ------------------


------  ----  ------------------
R 36    X 36  Y 36
1.0928  1.72  0.1883020397410907
------  ----  ------------------


------  ----  ------------------
R 37    X 37  Y 37
1.1226  1.74  0.1866150343245276
------  ----  ------------------


------  ----  ------------------
R 38    X 38  Y 38
1.1524  1.76  0.1844542790442833
------  ----  ------------------


------  ----  -------------------
R 39    X 39  Y 39
1.1822  1.78  0.18181867435346516
------  ----  -------------------


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R 40   X 40  Y 40
1.212  1.8   0.1787100148171215
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R 41    X 41  Y 41
1.2418  1.82  0.1751333054852011
------  ----  ------------------


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R 42    X 42                Y 42
1.2716  1.8399999999999999  0.17109706164581012
------  ------------------  -------------------


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R 43                X 43                Y 43
1.3014000000000001  1.8599999999999999  0.16661358311331573
------------------  ------------------  -------------------


------  ----  -------------------
R 44    X 44  Y 44
1.3312  1.88  0.16169919324085394
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R 45   X 45  Y 45
1.361  1.9   0.1563744320203454
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R 46    X 46  Y 46
1.3908  1.92  0.150664192014786
------  ----  -----------------


------  ----  -------------------
R 47    X 47  Y 47
1.4206  1.94  0.14459778553565994
------  ----  -------------------


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R 48                X 48  Y 48
1.4504000000000001  1.96  0.13820893151777244
------------------  ----  -------------------


------  ----  -------------------
R 49    X 49  Y 49
1.4802  1.98  0.13153565104299347
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R 50  X 50  Y 50
1.51  2.0   0.12462006151049349
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R 51    X 51  Y 51
1.5398  2.02  0.1175080611239063
------  ----  ------------------


------  ----  -------------------
R 52    X 52  Y 52
1.5696  2.04  0.11024889773039448
------  ----  -------------------


------  ----  -------------------
R 53    X 53  Y 53
1.5994  2.06  0.10289461914380889
------  ----  -------------------


------  ----  -------------------
R 54    X 54  Y 54
1.6292  2.08  0.09549940592091176
------  ----  -------------------


-----  ----  -------------------
R 55   X 55  Y 55
1.659  2.1   0.08811879209807622
-----  ----  -------------------


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R 56    X 56  Y 56
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1.6888  2.12  0.08080878454281003
------  ----  -------------------


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R 57                X 57  Y 57
1.7186000000000001  2.14  0.07362489717234476
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R 58    X 58  Y 58
1.7484  2.16  0.06662112211213643
------  ----  -------------------


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R 59    X 59                Y 59
1.7782  2.1799999999999997  0.059848865609590365
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-----  ----  --------------------
R 60   X 60  Y 60
1.808  2.2   0.053355881813497784
-----  ----  --------------------


------  ------------------  --------------------
R 61    X 61                Y 61
1.8378  2.2199999999999998  0.047185241952379636
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R 62    X 62  Y 62
1.8676  2.24  0.04137437953556515
------  ----  -------------------


------  ----  --------------------
R 63    X 63  Y 63
1.8974  2.26  0.035954253497147065
------  ----  --------------------


------  ------------------  --------------------
R 64    X 64                Y 64
1.9272  2.2800000000000002  0.030948670281600286
------  ------------------  --------------------


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R 65   X 65  Y 65
1.957  2.3   0.026373802396175178
-----  ----  --------------------


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R 66                X 66                Y 66
1.9868000000000001  2.3200000000000003  0.022237934737555108
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```

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R 67    X 67  Y 67
2.0166  2.34  0.01854146104390614
------  ----  ------------------


------  ------------------  ------------------
R 68    X 68                Y 68
2.0464  2.3600000000000003  0.01527714137610489
------  ------------------  ------------------


------  ----  --------------------
R 69    X 69  Y 69
2.0762  2.38  0.012430618113432022
------  ----  --------------------


-----  ------------------  --------------------
R 70   X 70                Y 70
2.106  2.4000000000000004  0.009981173355170401
-----  ------------------  --------------------


------  ----  --------------------
R 71    X 71  Y 71
2.1358  2.42  0.007902695892953567
------  ----  --------------------


------  ----  --------------------
R 72    X 72  Y 72
2.1656  2.44  0.006164812280854213
------  ----  --------------------


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R 73                X 73  Y 73
2.1954000000000002  2.46  0.004734125274677721
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R 74    X 74  Y 74
2.2252  2.48  0.0035754952643966644
------  ----  ---------------------


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R 75   X 75  Y 75
2.255  2.5   0.002653297282186558
-----  ----  --------------------


------  ----  --------------------
R 76    X 76  Y 76
2.2848  2.52  0.001932588344646366
------  ----  --------------------


------  ----  --------------------
R 77    X 77  Y 77
2.3146  2.54  0.001380127374534619
------  ----  --------------------
```

```
------  ----  --------------------
R 78    X 78  Y 78
2.3444  2.56  0.0009652022416890552
------  ----  --------------------


------  ----  --------------------
R 79    X 79  Y 79
2.3742  2.58  0.0006602344665348618
------  ----  --------------------


-----  ----  --------------------
R 80   X 80  Y 80
2.404  2.6   0.0004411502428103942
-----  ----  --------------------


------  ----  --------------------
R 81    X 81  Y 81
2.4338  2.62  0.0002875247417928441
------  ----  --------------------


------  ----  --------------------
R 82    X 82  Y 82
2.4636  2.64  0.00018252317969987095
------  ----  --------------------


------  ----  --------------------
R 83    X 83  Y 83
2.4934  2.66  0.00011267511066380601
------  ----  --------------------


------  ----------------  --------------------
R 84    X 84              Y 84
2.5232  2.6799999999999997  6.752659244596306e-05
------  ----------------  --------------------


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R 85   X 85  Y 85
2.553  2.7   3.9217694235159764e-05
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R 86    X 86              Y 86
2.5828  2.7199999999999998  2.2030477328761638e-05
------  ----------------  --------------------


------  ----  --------------------
R 87    X 87  Y 87
2.6126  2.74  1.1945989213623062e-05
------  ----  --------------------


------  ----  --------------------
R 88    X 88  Y 88
2.6424  2.76  6.239394075917665e-06
------  ----  --------------------
```

```
------  ------------------  ---------------------
R 89    X 89                Y 89
2.6722  2.7800000000000002  3.131776746491473e-06
------  ------------------  ---------------------


-----  ----  ----------------------
R 90   X 90  Y 90
2.702  2.8   1.5069870912251492e-06
-----  ----  ----------------------


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R 91                X 91                Y 91
2.7318000000000002  2.8200000000000003  6.933825796830401e-07
------------------  ------------------  ---------------------


------  ----  ----------------------
R 92    X 92  Y 92
2.7616  2.84  3.0421648314597047e-07
------  ----  ----------------------


------  ------------------  ----------------------
R 93    X 93                Y 93
2.7914  2.8600000000000003  1.2690049947457608e-07
------  ------------------  ----------------------


------  ----  ----------------------
R 94    X 94  Y 94
2.8212  2.88  5.017142393403524e-08
------  ----  ----------------------


-----  ------------------  ----------------------
R 95   X 95                Y 95
2.851  2.9000000000000004  1.8737668744899493e-08
-----  ------------------  ----------------------


------------------  ----  --------------------
R 96                X 96  Y 96
2.8808000000000002  2.92  6.58718831430551e-09
------------------  ----  --------------------


------  ----  --------------------
R 97    X 97  Y 97
2.9106  2.94  2.17154480134988e-09
------  ----  --------------------


------  ----  ----------------------
R 98    X 98  Y 98
2.9404  2.96  6.686103670645189e-10
------  ----  ----------------------

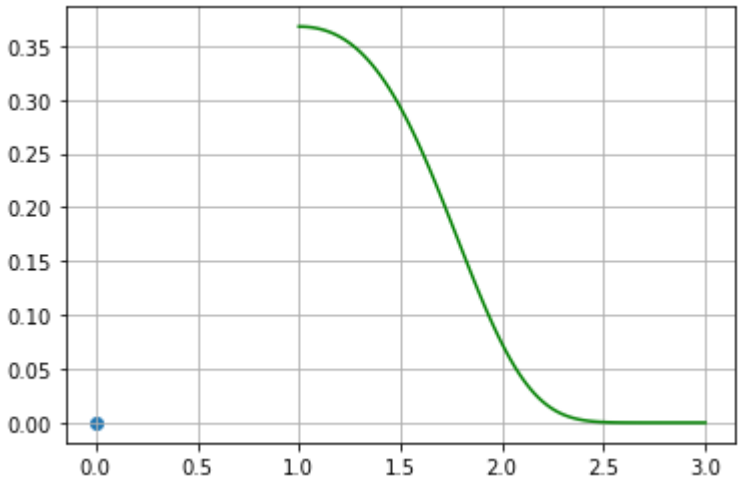

------  ----  ----------------------
R 99    X 99  Y 99
2.9702  2.98  1.9144750465202789e-10
------  ----  ----------------------
```

```
-----  -----  --------------------
R 100  X 100  Y 100
3.0    3.0    5.074727804655525e-11
-----  -----  --------------------
The Value Of The Integral Is F(x)= 0.164817
```

In [9]:

```
# for plotting only
x= np.linspace(a,b,n+1)
r= np.linspace(a,b,n+1)

plt.axvspan(0,simpsonshort,color='green',alpha=0)
plt.plot(r,weibullDistribution(x,r),'green')
plt.grid()
plt.scatter(0,0)
plt.show()
```




This repo contains an introduction to Jupyter and IPython.

Outline of some basics:

- Notebook Basics
- IPython - beyond plain python
- Markdown Cells
- Rich Display System
- Custom Display logic
- Running a Secure Public Notebook Server
- How Jupyter works to run code in different languages.

You can also get this tutorial and run it on your laptop:

```
git clone https://github.com/ipython/ipython-in-depth
```

Install IPython and Jupyter:

with conda:

```
conda install ipython jupyter
```

with pip:

```
# first, always upgrade pip!
pip install --upgrade pip
pip install --upgrade ipython jupyter
```

Start the notebook in the tutorial directory:

```
cd ipython-in-depth
jupyter notebook
```