In [30]:
```
import powerlaw
import plfit
import numpy as np
```

Failed - Simple integers

In [142]:
```
x1 = [500,150,90,81,75,75,70,65,60,58,49,47,40]
```

In [143]:
```
plfit.plfit(x1)
```

```
(PLFIT) Warning: finite-size bias may be present.
```

Out[143]:
```
[2.71, 47, -58.6063022349002]
```

In [144]:
```
fit = powerlaw.Fit(x1)
fit.alpha, fit.xmin
```

```
Calculating best minimal value for power law fit
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

Out[144]:
```
(3.1151851915645903, 58.0)
```

Failed - Simple floats

In [120]:
```
x2 = list(map(float, [500,150,90,81,75,75,70,65,60,58,49,47,40]))
```

In [121]:
```
plfit.plfit(x2)
```

```
(PLFIT) Warning: finite-size bias may be present.
```

Out[121]:
```
[2.71, 47, -58.6063022349002]
```

In [122]:
```
fit = powerlaw.Fit(x2)
fit.alpha, fit.xmin
```

```
Calculating best minimal value for power law fit
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

Out[122]:
```
(3.1151851915645903, 58.0)
```

OK - Random generator - power_law

In [123]:
```
x3 = list(map(float, fit.power_law.generate_random(1000)))
```

```
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

In [124]:
```
plfit.plfit(x3)
```

Out[124]:
```
[3.1147574620105507, 58.24183508449148, -4721.491809124142]
```

In [125]:
```
fit = powerlaw.Fit(x3)
fit.alpha, fit.xmin
```

```
Calculating best minimal value for power law fit
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

Out[125]:
```
(3.11475746201055, 58.24183508449148)
```

OK - Random generator - exponential

In [126]:
```
x4 = list(map(float, fit.exponential.generate_random(1000)))
```

```
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

In [127]:
```
plfit.plfit(x4)
```

Out[127]:
```
[5.236737855642799, 162.37338502309328, -595.6205409904644]
```

In [128]:
```
fit = powerlaw.Fit(x4)
fit.alpha, fit.xmin
```

```
Calculating best minimal value for power law fit
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

Out[128]:
```
(5.236737855642799, 162.37338502309328)
```

Failed - Random generator, floats rounded

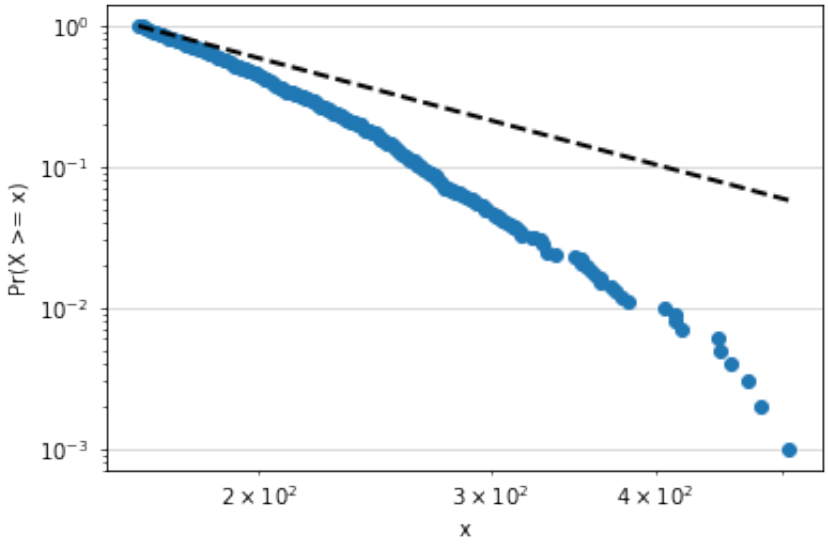
In [130]:
```
x5 = list(map(int, fit.exponential.generate_random(1000)))
```

In [131]:
```
plfit.plfit(x5)
```

Out[131]: [3.5, 162, -4980.7589744646775]

In [172]:
```
plfit.plplot(x5, 162, 3.5)
```

```
/usr/local/lib/python3.7/site-packages/numpy/ma/core.py:6652: Runt
imeWarning: overflow encountered in power
  result = np.where(m, fa, umath.power(fa, fb)).view(basetype)
```



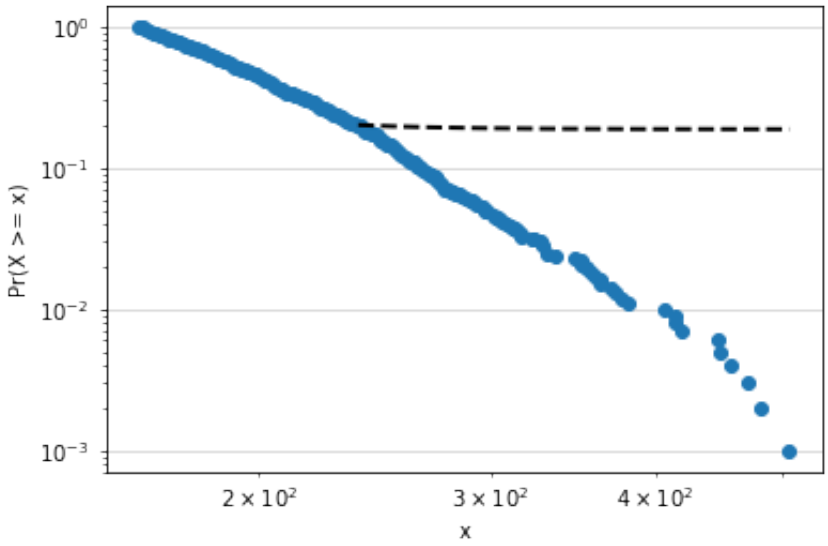
In [132]:
```
fit = powerlaw.Fit(x5)
fit.alpha, fit.xmin
```

```
Calculating best minimal value for power law fit
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

Out[132]: (7.362871122554172, 238.0)

In [171]:
```
plfit.plplot(x5, 238, 7.362871122554172)
```

```
/usr/local/lib/python3.7/site-packages/numpy/ma/core.py:6652: Runt
imeWarning: overflow encountered in power
  result = np.where(m, fa, umath.power(fa, fb)).view(basetype)
```



OK - Random generator, squared

In [136]:
```
x6 = list(map(lambda x: float(x) ** 2, fit.exponential.generate_ran
dom(1000)))
```

```
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

In [137]:
```
plfit.plfit(x6)
```

Out[137]:
```
[3.6929979751997832, 12752735160.865337, -2956.211238873185]
```

In [138]:
```
fit = powerlaw.Fit(x6)
fit.alpha, fit.xmin
```

```
Calculating best minimal value for power law fit
/usr/local/lib/python3.7/site-packages/powerlaw.py:700: RuntimeWar
ning: invalid value encountered in true_divide
  (Theoretical_CDF * (1 - Theoretical_CDF))
```

Out[138]:
```
(3.692997975199784, 12752735160.865337)
```