

## Question #1

```
gnuplot> f(x) = a*exp(-x/b); a=37000; b=2;
gnuplot> fit f(x) 'radioactive.hst' using 1:3 via a,b
```

Final set of parameters		Asymptotic Standard Error	
=====		=====	
a	= 36638	+/- 34.75	(0.09486%)
b	= 2.18684	+/- 0.00363	(0.166%)

```
gnuplot> plot f(x), 'radioactive.hst' using 1:3
```

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```

## Question #2

```
gnuplot> poisson( r , mu ) = exp(-mu) * mu**(r-1) / gamma(r)
gnuplot> set samples 10000
gnuplot> set xrange [0:30]
gnuplot> plot poisson( x , 2 )
gnuplot> plot poisson( x , 5 )
gnuplot> plot poisson( x , 10 )
```

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```

## Question #3

```
gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=2;
gnuplot> set terminal table
Terminal type set to 'table'
gnuplot> set out 'poisson2.dat'
gnuplot> plot poisson(x)
#use your text editor to get rid of the '0 0 u' line on this .dat file....
gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=10;
gnuplot> fit poisson(x) 'poisson2.dat' via m
```

Final set of parameters		Asymptotic Standard Error	
=====		=====	
m	= 2	+/- 3.563e-08	(1.781e-06%)

correlation matrix of the fit parameters:

	m
m	1.000

```
gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=5;
gnuplot> set out 'poisson5.dat'
gnuplot> plot poisson(x)
#use your text editor to get rid of the '0 0 u' line on this .dat file....
gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=1;
gnuplot> fit poisson(x) 'poisson5.dat' via m
```

Final set of parameters		Asymptotic Standard Error	
=====		=====	
m	= 5	+/- 8.265e-08	(1.653e-06%)

correlation matrix of the fit parameters:

```

          m
m         1.000

```

```

gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=10;
gnuplot> set out 'poisson10.dat'
gnuplot> plot poisson(x)
#use your text editor to get rid of the '0 0 u' line on this .dat file....
gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=1;
gnuplot> fit poisson(x) 'poisson10.dat' via m

```

Final set of parameters	Asymptotic Standard Error
=====	=====
m = 10	+/- 2.136e-07 (2.136e-06%)

correlation matrix of the fit parameters:

```

          m
m         1.000

```

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Question #4

```

gnuplot> poisson( x ) = exp(-m) * m**(x-1) / gamma(x); m=16;
gnuplot> set out 'poisson16.dat'
gnuplot> plot poisson(x)
#use your text editor to get rid of the '0 0 u' line on this .dat file....
gnuplot> f(x) = A*exp(-((x-mu)/d)**2)/2); A=10;mu=10;d=10;
gnuplot> fit f(x) 'poisson16.dat' via A,mu,d;

```

Final set of parameters	Asymptotic Standard Error
=====	=====
A = 0.100067	+/- 4.486e-05 (0.04483%)
mu = 16.7486	+/- 0.002063 (0.01232%)
d = 3.984	+/- 0.002063 (0.05178%)

correlation matrix of the fit parameters:

```

          A      mu      d
A         1.000
mu        0.002  1.000
d        -0.577 -0.002  1.000

```

```
gnuplot> plot f(x), 'poisson16.dat'
```