

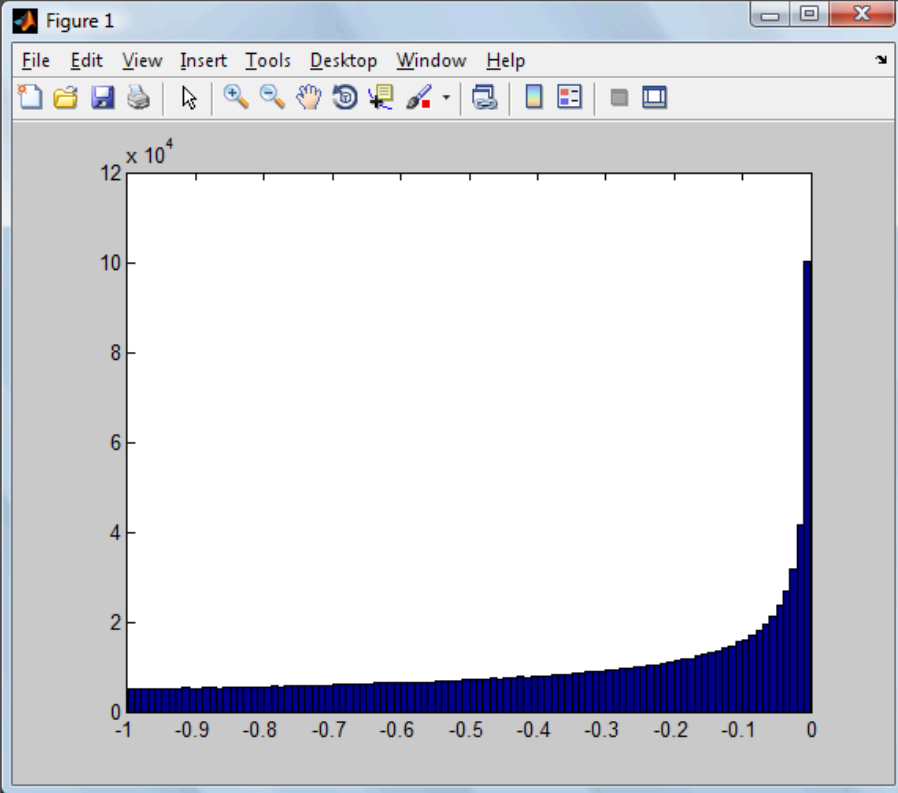
Lab B Bonus Homework

A Sampling

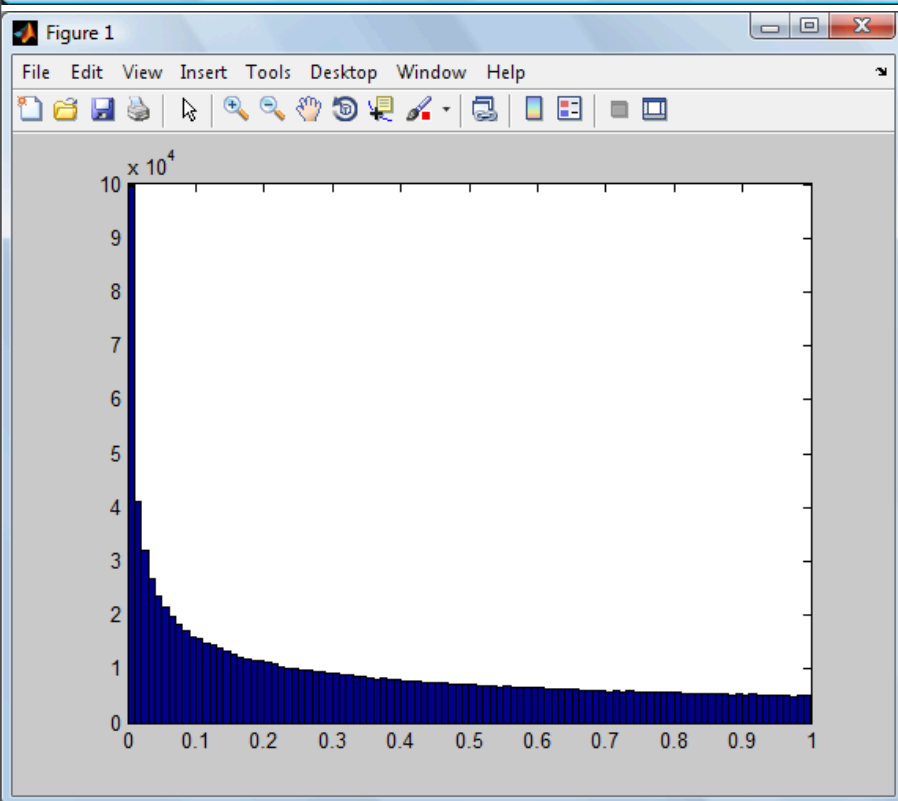
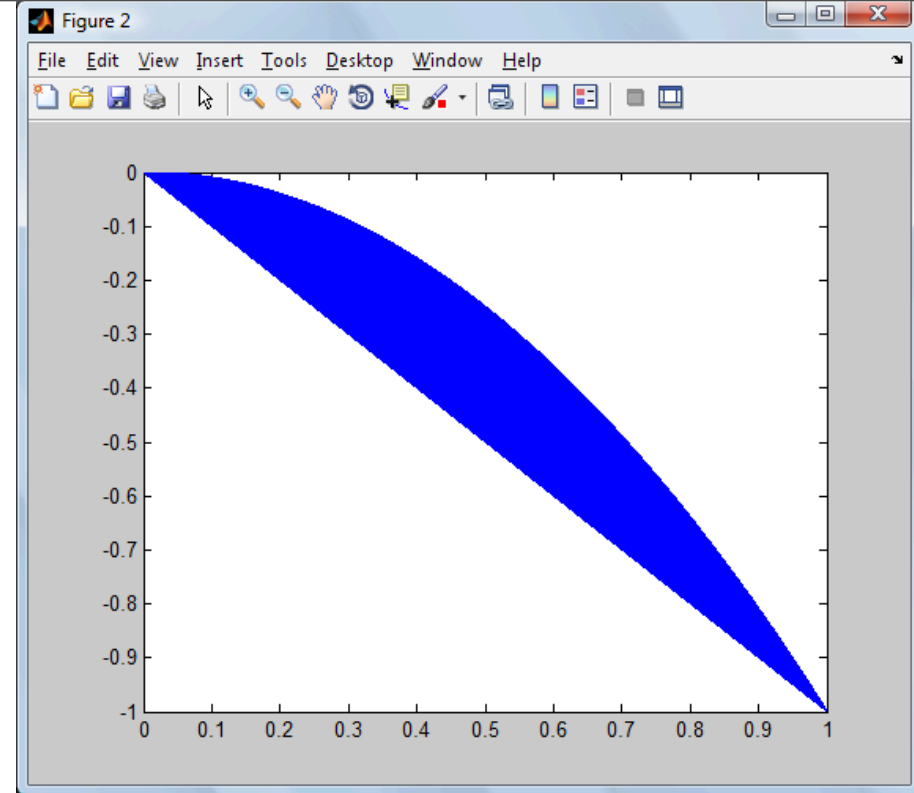
Problem B. bonus

- random variable $Y = k * X * X$, where k is a constant.
- This shows properties similar to the function of random variable in B5. In this case, the function is $g(x) = k * x^2$ instead of sigmoid transformation.
- $X \sim \text{Uniform}(0,1)$ from `rand` in MatLab

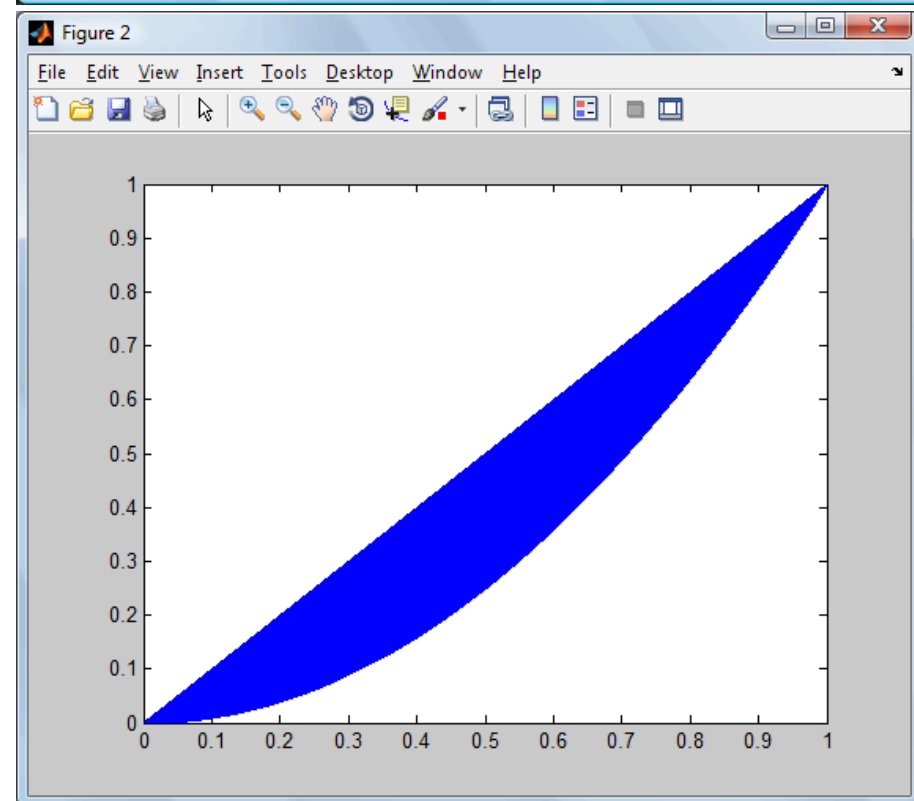
$K=1$



$K=-1$



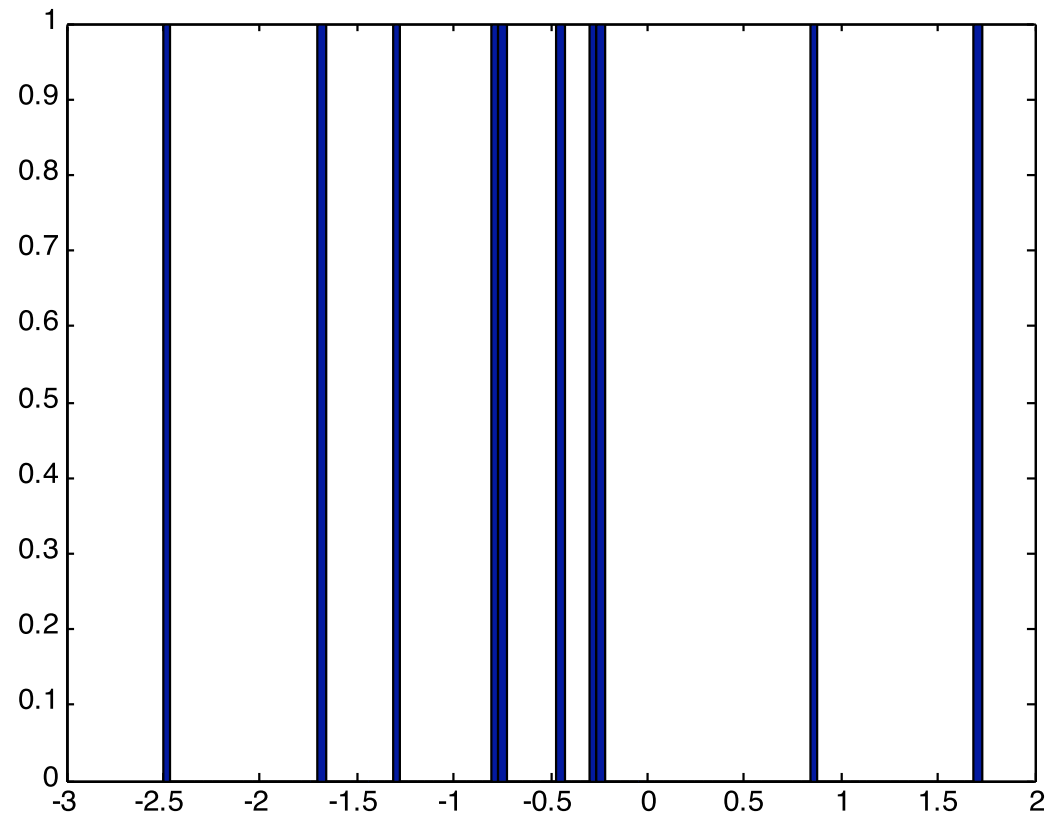
$K=1$



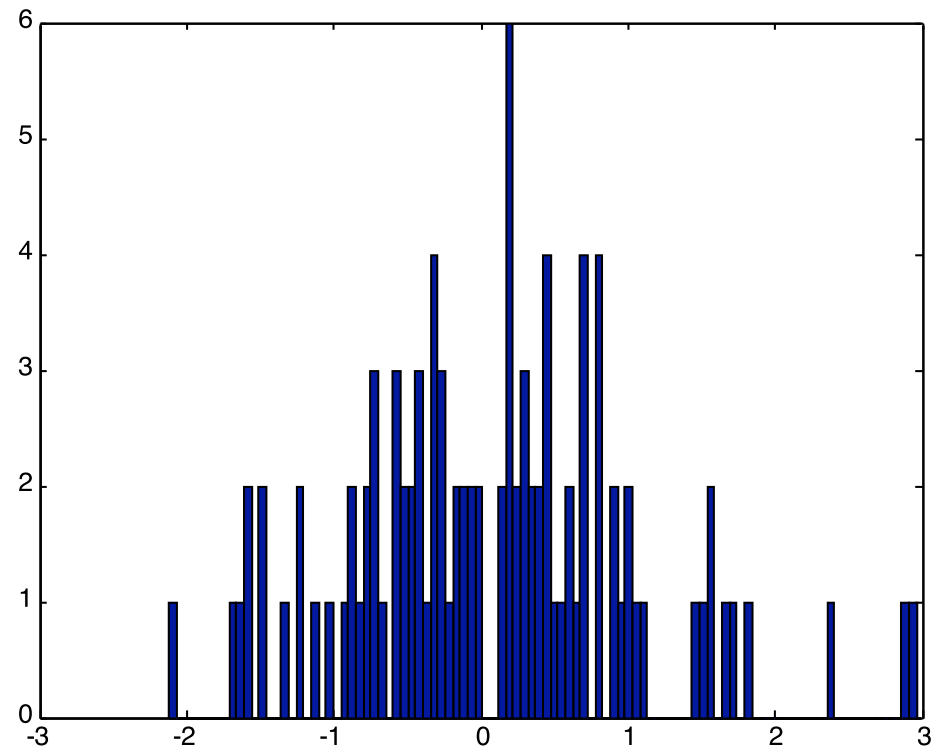
Bonus Homework Problem

- How does \log of a random number A look in histogram.
- And as the number of trials increase, what kind of shape does that form?

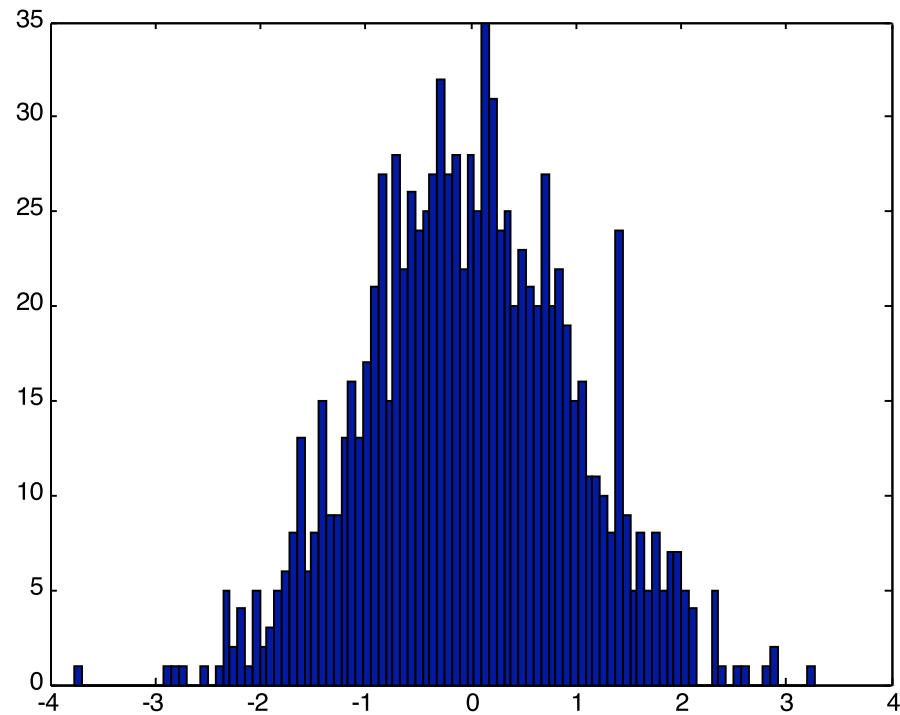
```
A = randn(10,1);  
F = log(A);
```



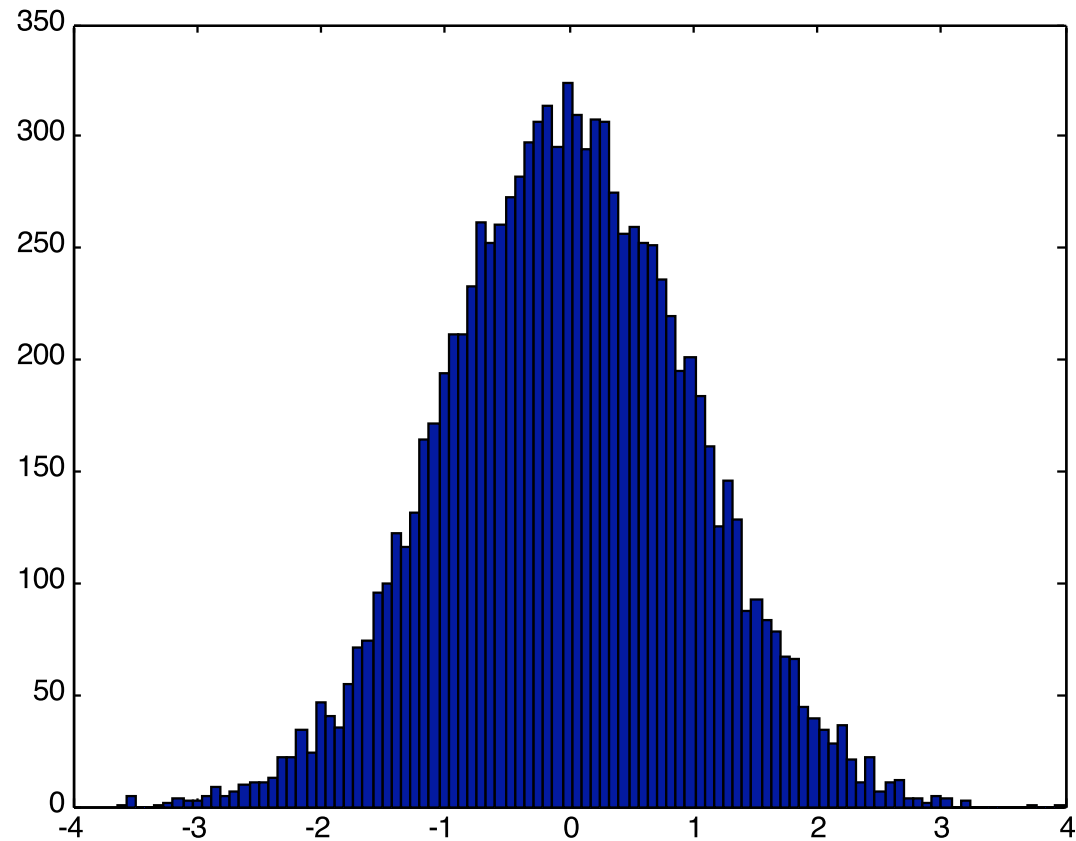
```
A = randn(100,1);  
F = log(A);
```



```
A = randn(1000,1);  
F = log(A);
```



```
A = randn(10000,1);  
F = log(A);
```



In conclusion...

- As the number of the trials increase, the histogram forms bell shape and from the histogram we can extrapolate the mean to be zero.