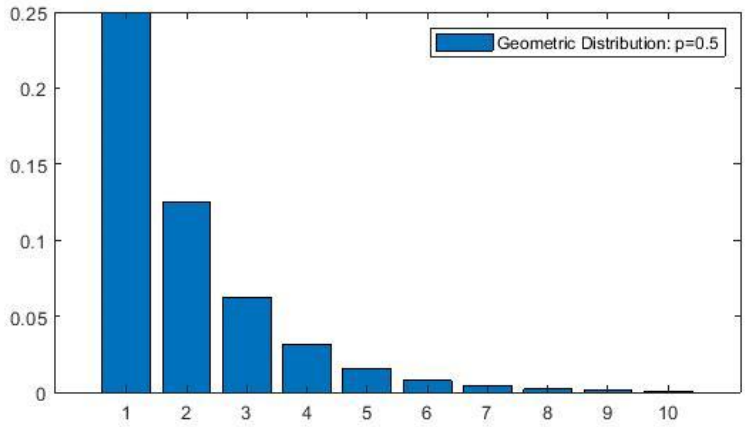
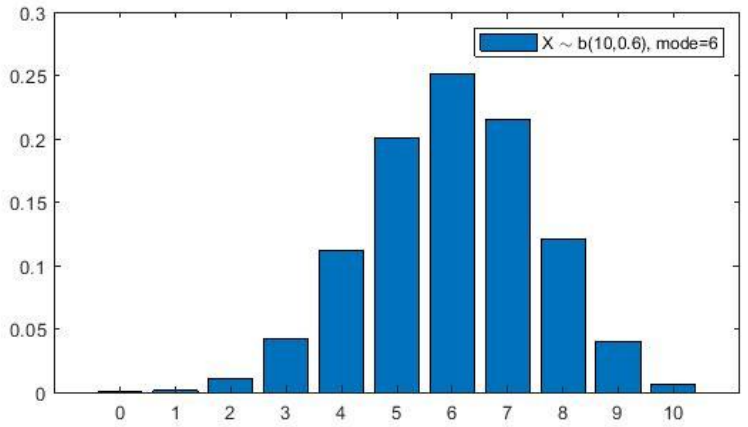
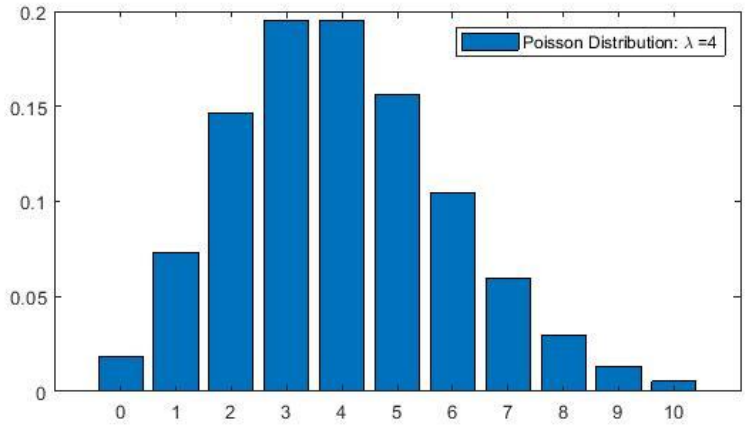
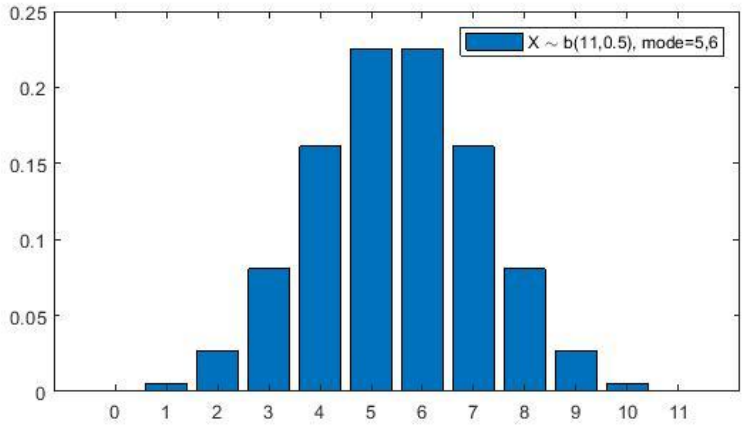
Illustrations of Some Discrete Distributions









Matlab Code for Discrete Distributions

```
% Script file: h2p7.m - Discrete Distributions
% ----------------------------------------------------
subplot(2,2,1)
X=1:10; Y=geopdf(X,0.5); bar(X,Y,0.8);
legend('Geometric Distribution: p=0.5')
subplot(2,2,2)
X=0:10; Y=binopdf(X,10,0.6); bar(X,Y,0.8)
legend('X \sim b(10,0.6), mode=6')
subplot(2,2,3)
X=0:10; Y=poisspdf(X,4); bar(X,Y,0.8)
legend('Poisson Distribution: \lambda =4, mode=3,4')
subplot(2,2,4)
X=0:11; Y=binopdf(X,11,0.5); bar(X,Y,0.8)
legend('X \sim b(11,0.5), mode=5,6')
% X=4:12; Y=nbinpdf(X,4,0.6); bar(X,Y,0.8)
```

Can you draw the following distributions?

1. X~b(13,0.75)
2. X has a geometric distribution with p=0.8
3. X~b(10,0.7)
4. X has a Poisson distribution with $\lambda = 3$
5. X has a negative binomial distribution with r=4, p=0.6
6. For each of the above distributions, write down the moment-generating function, E(X), Var(X), and mode.