HW6 solution

5.26

For n=8 and p=0.6

a. $\mathrm{b}(6;\mathrm{n},\mathrm{p}) = \mathrm{C}_6^8(0.6)^6(0.4)^2 = 0.20902$

b. $\mathrm{b}(6;\mathrm{n},\mathrm{p}) = \sum_{x=0}^{6} b(x;\mathrm{n},\mathrm{p}) - \sum_{x=0}^{5} b(x;\mathrm{n},\mathrm{p}) = 0.8936 - 0.6846 = 0.2090$

5.41

Using the binomial approximation of the hypergeometric distribution with 0.7, the probability is $\sum_{x=10}^{13} b(x;18,0.7) = 0.6077$

5.9 (Matlab)

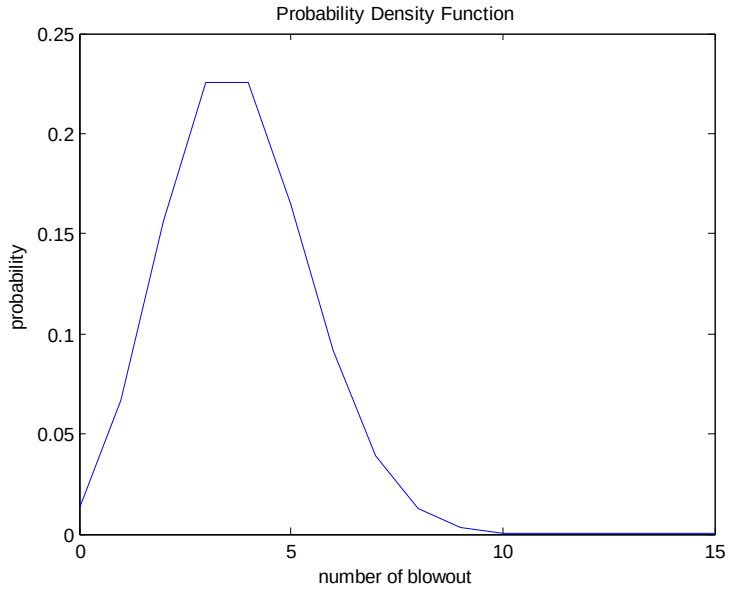
For n=15 and p=0.25, we have

a. $\mathrm{P}(3 \le \mathrm{X} \le 6) = \mathrm{P}(\mathrm{X} \le 6) - \mathrm{P}(\mathrm{X} \le 2) = 0.9434 - 0.2361 = 0.7073$

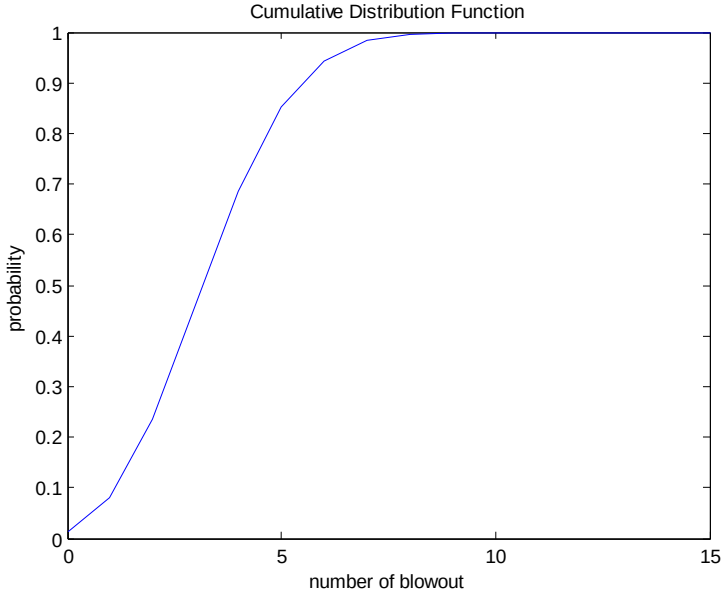
b. $\mathrm{P}(\mathrm{X} < 4) = \mathrm{P}(\mathrm{X} \le 3) = 0.4613$

c. $\mathrm{P}(\mathrm{X} > 5) = 1 - \mathrm{P}(\mathrm{X} \le 5) = 1 - 0.8516 = 0.1484$

d. PDF



e. CDF



Matlabcode:

```
>> binocdf(6,15,0.25)- binocdf(2,15,0.25)

ans =

    0.7073

>> cdf('Binomial',3,15,0.25)

ans =

    0.4613

>> 1-cdf('Binomial',5,15,0.25)

ans =

    0.1484
```

```
n=15;
p=0.25;
x=0:n;
y=binopdf(x,n,p);
figure
plot(x,y);
xlabel('number of blowout');
ylabel('probability');
title('Probability Density Function');

y=binocdf(x,n,p);
figure
plot(x,y);
xlabel('number of blowout');
ylabel('probability');
title('Cumulative Distribution Function');
```