

## Exercise pag 18

### Slide 1\_Sampling

```
n=10;
theshold=180;
nsim=100;

x=normrnd(170,sqrt(100),n,1);
plot(x, '*')
line([1,n],[180,180], 'Color', 'red')
sum(x<theshold)/n
title('X')
%figure

for i=1:nsim
y(:,i)=normrnd(170,sqrt(100),n,1);
end;

y1=y<theshold;
y1sum=sum(y1);
sum(y1sum==n)/nsim

%%%%%
figure;
count=0;
for h=1:25
    subplot(5,5,h);
    plot(y(:,h), '*')
    hold on
    line([0 n],[theshold theshold ], 'Color', 'red')
    if y1sum(1,h)==n;
        count=count+1;
        set(gca, 'Color', 'y')
    end;
end;

end;

sgtitle(['Freq(X_1<',num2str(theshold), '\ldots, X_{10}<',num2str(theshold),')=', num2str(count/25), '
Prob(X_1>',num2str(theshold), '\ldots, X_{10}<',num2str(theshold),')='
, num2str((normcdf(theshold,170,10))^n)], 'FontSize', 12)

%sampling distribution

for i=1:nsim
    ymean(:,i)=mean(y(:,i));
```

```
end;
```

```
figure  
plot(ymean, '*')  
%ylim([0 max(ymean)])  
hold on  
line([0 nsim],[theshold theshold ], 'Color','red')  
title('mean')
```