

1. function [T,d,h_max]=func1(theta,v)%T为总飞行时间,d为落点距离,h_max为最大飞行高度

```
a0=theta;g=9.8;
vx=v*cos(a0*pi/180);vy=v*sin(a0*pi/180);
T=2*vy/g;
d=vx*T;
h_max=vy^2/(2*g);
for t=0:0.01:T
    h=vy*t-g*t^2/2;
    x=5+vx*t;
    if h>h_max
        h_max=h;
    end
    pause(0.005)
    plot(x,h,'or','MarkerSize',5,'MarkerFace',[1,0,0])
    grid
    axis([0,d+10,0,h_max])
end
```

```
>> [t,d,h_max]=func1(35,5)
```

```
t =
```

```
0.5853
```

```
d =
```

```
2.3960
```

```
h_max =
```

```
0.4196
```

```
>> [t,d,h_max]=func1(55,5)
```

```
t =
```

```
0.8359
```

```
d =
```

```
2.3947
```

```
h_max =
```

```
0.8559
```

```
>> [t, d, h_max]=func1(75, 5)
```

```
t =
```

```
0.9856
```

```
d =
```

```
1.2747
```

```
h_max =
```

```
1.1900
```

```
>> [t, d, h_max]=func1(90, 5)
```

```
t =
```

```
1.0204
```

```
d =
```

```
0
```

```
h_max =
```

```
1.2755
```

```
>> [t, d, h_max]=func1(35, 30)
```

```
t =
```

```
3.5117
```

```
d =
```

```
86.2983
```

```
h_max =
```

```
15.1067
```

```
>> [t, d, h_max]=func1(55, 30)
```

```
t =
```

```
5.0152
```

```
d =
```

```
86.2983
```

```
h_max =
```

```
30.8117
```

```
>> [t, d, h_max]=func1(75, 30)
```

```
t =
```

```
5.9138
```

```
d =
```

```
45.9184
```

```
h_max =
```

```
42.8424
```

```
>> [t, d, h_max]=func1(90, 30)
```

```
t =
```

```
6.1224
```

```
d =
```

```
1.1247e-14
```

```
h_max =
```

```
45.9184
```

```
2.(1) function [rent,profit_max]=func2()
```

```
profit_max=0;
```

```
for i=1000:25:3500
```

```
    profit=i*(100-(i-1000)/25);
```

```
    if profit>profit_max
```

```
        profit_max=profit;
```

```

        rent=i;
    end
end
>> [rent,profit_max]=func2()

rent =

    1750

profit_max =

    122500

```

即每月租金为1750时收益最大，最大收益为122500

```

(2) function [rent,profit_max]=func2()
profit_max=0;
for i=1000:25:3500
    profit=(i-20)*(100-(i-1000)/25);%将租金减去维护费即为收益
    if profit>profit_max
        profit_max=profit;
        rent=i;
    end
    plot(i,profit,'*r','MarkerSize',2)
    grid on
    hold on
    axis([1000,3500,0,profit_max])
end

>> [rent,profit_max]=func2()

rent =

    1750

profit_max =

    121100

```

即每月租金为1750时收益最大，最大收益为121100

3. function m=func3(p,i,n) %p0为本金，i为利率，n为年数

```

for k=1:n
    p=p*(1+i);
end
m=p/n;
>> func3(2500000,0.08,20)

```

ans =

5.8262e+05

即每年应还582620元

4. %func4.m

```
P1=2000;P2=3000;h1=5;h2=6;s=20;
```

```
syms x
```

```
    r1=(h1^2+x^2)^(1/2);
```

```
    r2=(h2^2+(s-x)^2)^(1/2);
```

```
    a1=asin(h1/r1);
```

```
    a2=asin(h2/r2);
```

```
    E1=E(P1,a1,r1);
```

```
    E2=E(P2,a2,r2);
```

```
    f=(E1^2+E2^2+2*E1*E2*(sin(a1)*sin(a2)-cos(a1)*cos(a2)))^(1/2);
```

```
diff(f,x);
```

```
vpasolve(diff(f),x)
```

%E.m

```
function y=E(P,a,r)
```

```
y=P*sin(a)/(4*pi*r^2);
```

```
>> run('C:\Users\makabaka\Desktop\MATLAB\func4.m')
```

ans =

9.1212367626384616986191402007243