Square:

clear

n=80;

b=90;

x1=0;

y1=0;

x2=n;

y2=n;

x=[x1, x2, x2, x1];

y=[y1, y1, y2, y2];

plot(x,y);

k=0;

m=0.866;

a=0.75;

c=0;

for l=0:1:b

c=c+b;

for i=1:1:b

k=k+i;

x(k)=i\*m;

y(k)=y2-m\*((2\*l)+a);

if(x<=n)

if (y>=0)

plot (x,y,'r\*');

hold on;

end

else

break;

end

end

k=1;

u= y2-m\*((2\*l)+1+a);

for i=0:1:b

k=k+i;

x(k)=(((2\*i)+1)\*m)/2;

y(k)=u;

if(x<=n)

if(y>=0)

plot (x,y,'r\*');

hold on;

end

else

break;

end

end

end

disp(c);

Circle:

clear

n=80;

radi1=39.493;

xCenter = n/2;

yCenter = n/2;

plot(xCenter,yCenter,'r\*');

hold on;

theta = 0 : 0.01 : 2\*pi;

area=pi\*(radi1\*radi1);

disp(area);

x = radi1 \* cos(theta) + xCenter;

y = radi1 \* sin(theta) + yCenter;

plot(x, y,'r-');

hold on;

axis square;

xlim([0 n]);

ylim([0 n]);

plot(xCenter,yCenter,'b\*')

m=0;

inner\_circle=0;

for p=1:1:40

radius=p\*0.866;

if (radius<=radi1)

x = radius \* cos(theta) + xCenter;

y = radius \* sin(theta) + yCenter;

plot(x,y,'g-');

inner\_circle=inner\_circle+1;

alpha=((2\*180)/(8\*p))\*2;

for q=0:1:150

k=q\*alpha;

if(k<360)

x=radius\*cosd(k)+xCenter;

y=radius\*sind(k)+yCenter;

plot(x,y,'b\*');

else

break;

end

m=m+1;

end

else

break;

end

end

disp(m);

disp(inner\_circle);

Hexagon

clear

n=50;

a=50;

radi1=33.851;

xCenter = n/2;

yCenter = n/2;

plot(xCenter,yCenter,'k\*');

hold on;

theta = 0 : 0.01 : 2\*pi;

area=pi\*(radi1\*radi1);

disp(area);

x = radi1 \* cos(theta) + xCenter;

y = radi1 \* sin(theta) + yCenter;

N\_sides = 6;

plot(x, y,'r-');

c=0;

e=0;

for p=1:1:a

scale = p\*(sqrt(3));

if (scale<=radi1)

t=(1/(N\_sides\*2):1/N\_sides:1)'\*2\*pi;

x=sin(t);

y=cos(t);

x=scale\*[x; x(1)]+xCenter;

y=scale\*[y; y(1)]+yCenter;

plot(x,y);

e=e+1;

for s=1:1:p

c=c+6;

for t=0:1:s

theta1=(60/s)+t\*(60/s);

d=0;

for q=1:1:6

d=d+1;

m=(sqrt(3))\*s;

lsq=sqrt(((m/s)^2)+((m^2)-((2\*(m/s))\*m\*cosd(60))));

if (d==1)

xp=(lsq\*cosd(theta1))+xCenter;

ypsq=(lsq\*sind(theta1))+yCenter;

plot (xp,ypsq,'k\*');

hold on;

else

theta1=theta1+60;

xp=(lsq\*cosd(theta1))+xCenter;

ypsq=(lsq\*sind(theta1))+yCenter;

plot(xp,ypsq,'k\*');

hold on;

end

end

end

end

else

break;

end

end

disp(c+1);

disp(e);