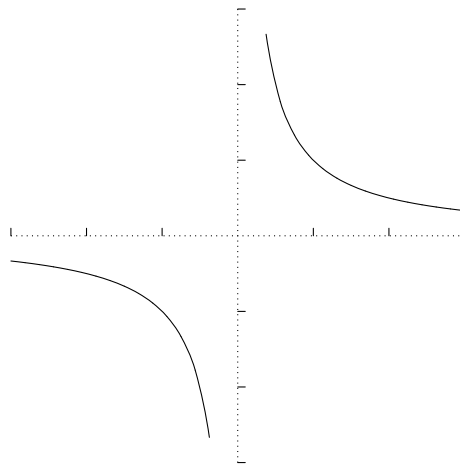
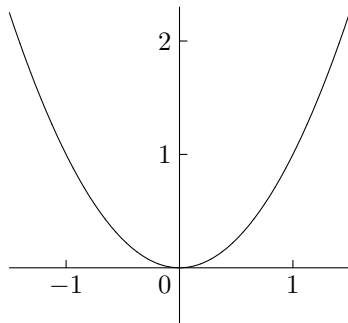
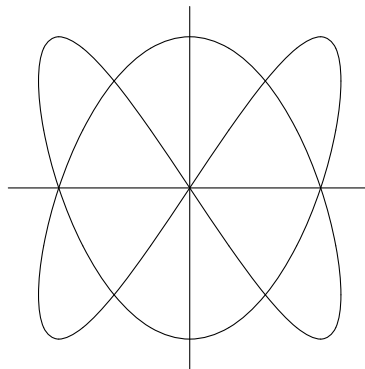
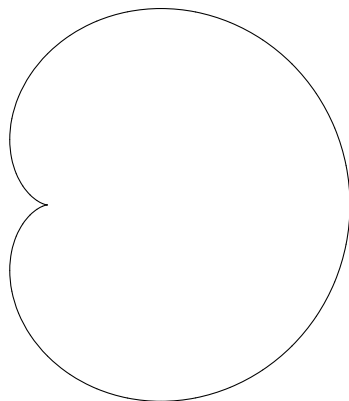


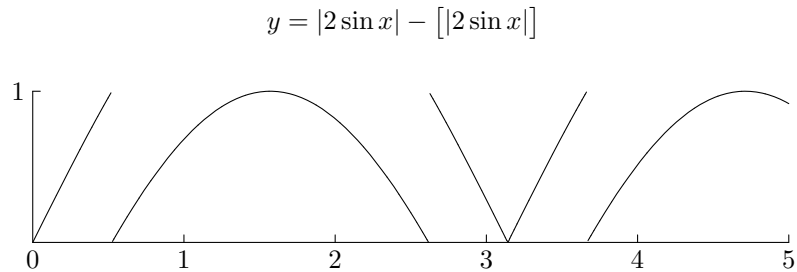
(1)



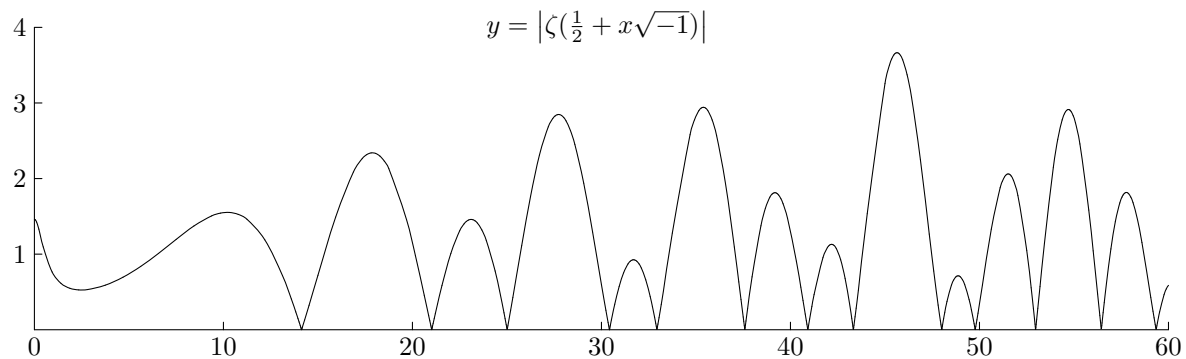
(2)



(3)

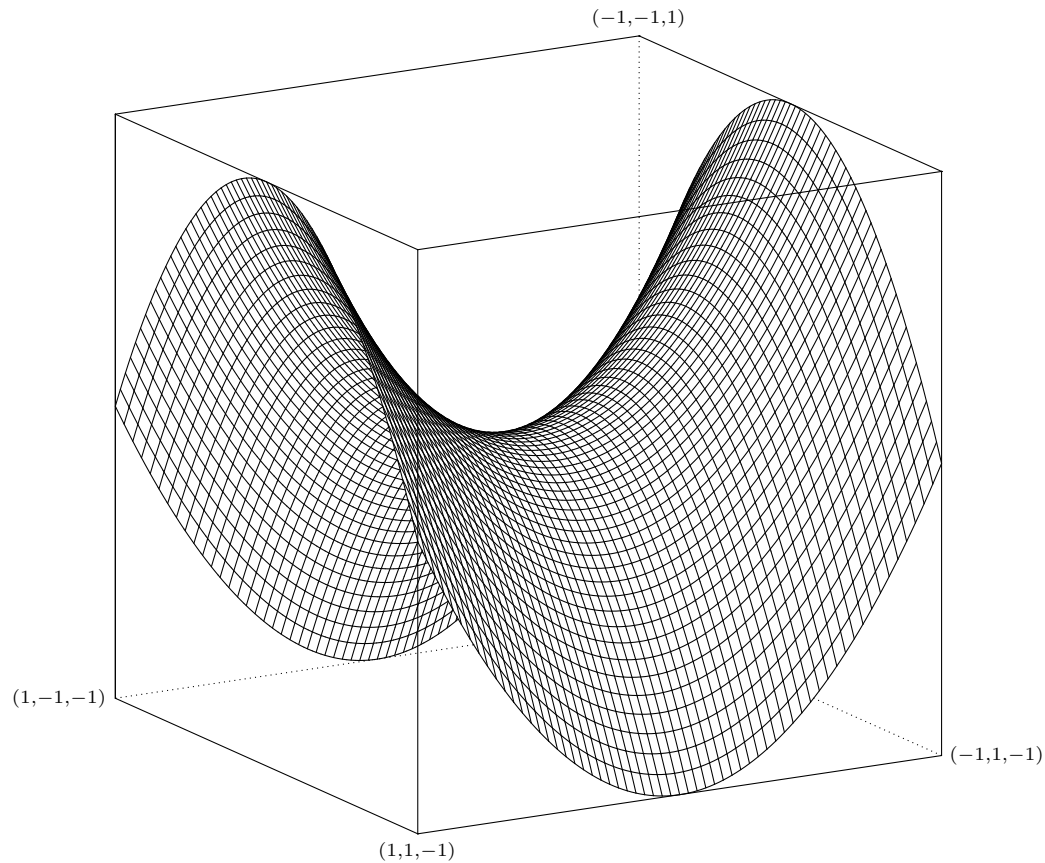


(4)



$$z = x^2 - y^2 \quad (-1 \leq x \leq 1, -1 \leq y \leq 1)$$

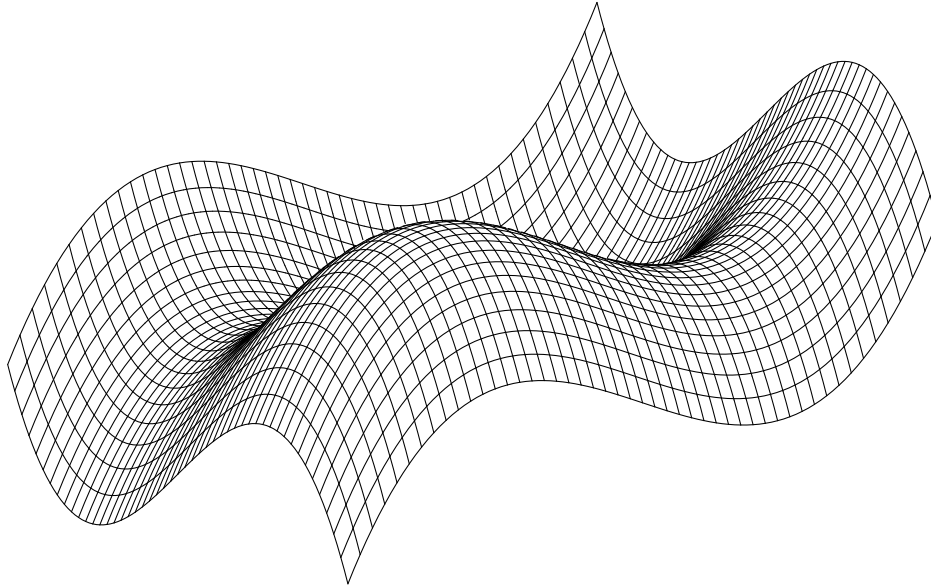
angle  $(60^\circ, 15^\circ)$



(5)

$$z = -x^3 - y^3 \quad (-1 \leq x \leq 1, -1 \leq y \leq 1)$$

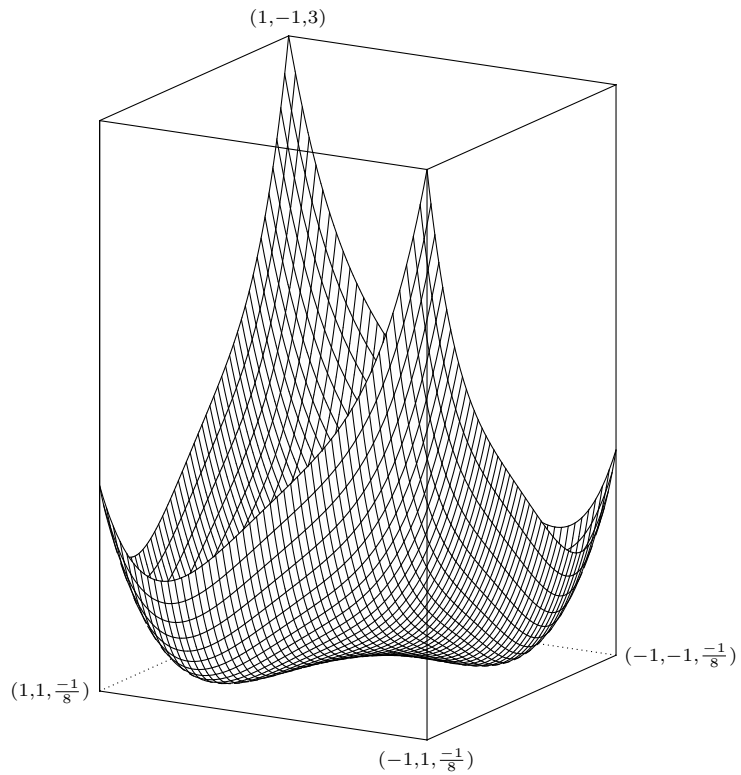
angle  $(60^\circ, -35^\circ)$



(6)

$$z = x^4 - yx + y^4 \quad (-1 \leq x \leq 1, -1 \leq y \leq 1)$$

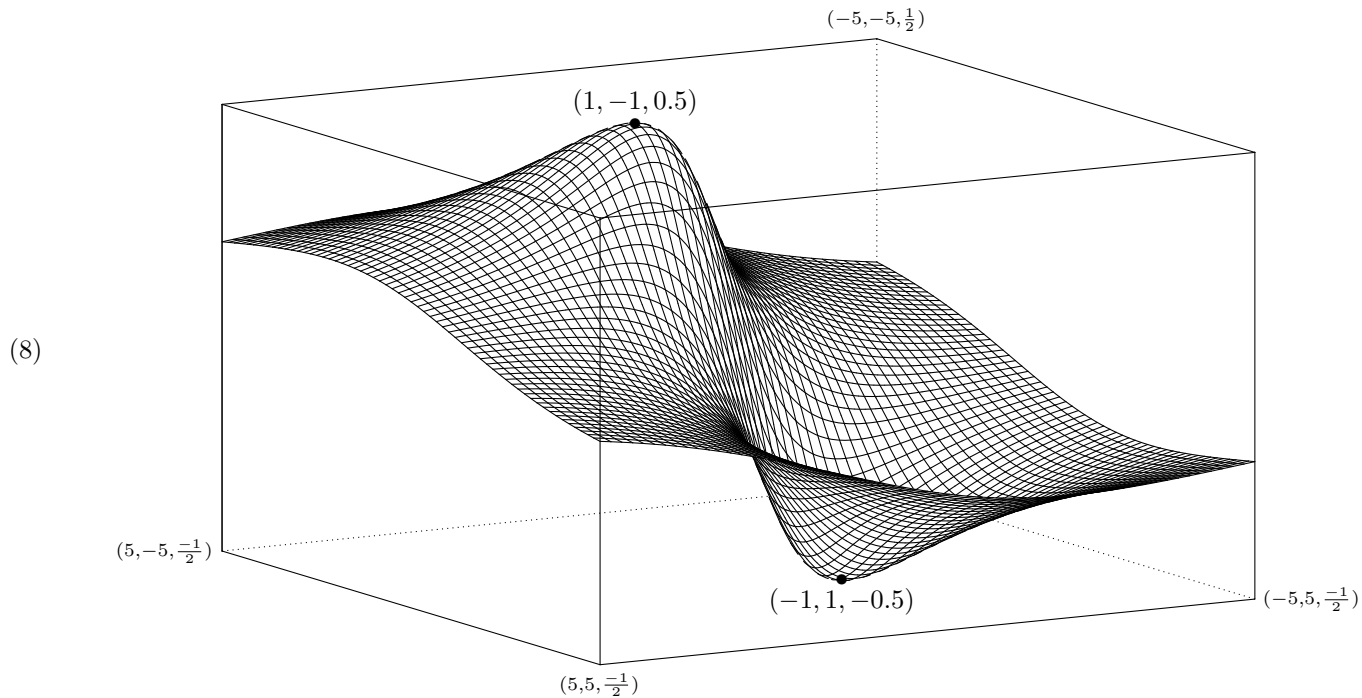
angle  $(120^\circ, 15^\circ)$



(7)

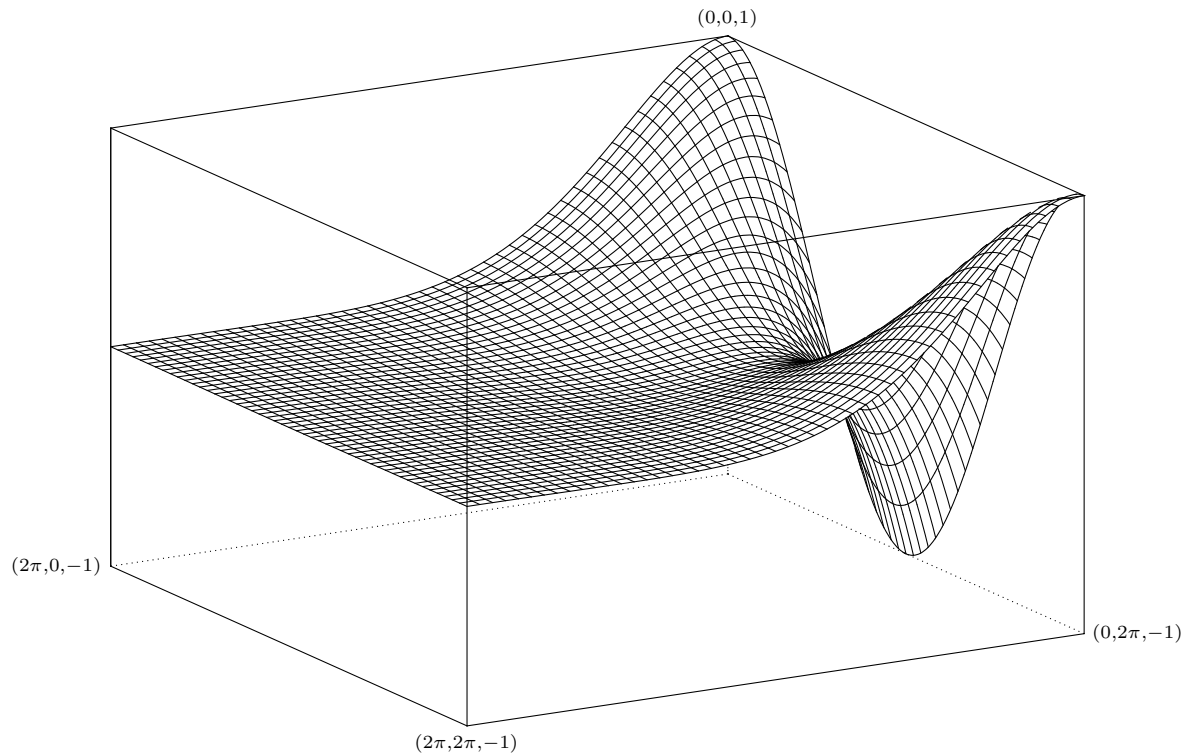
$$z = \frac{x - y}{x^2 + y^2 + 2} \quad (-5 \leq x \leq 5, -5 \leq y \leq 5)$$

angle  $(60^\circ, 10^\circ)$  ratio 1 : 1 : 6



$$z = (\sin(x) + \cos(y)) \exp(-x) \quad (0 \leq x \leq 2\pi, 0 \leq y \leq 2\pi)$$

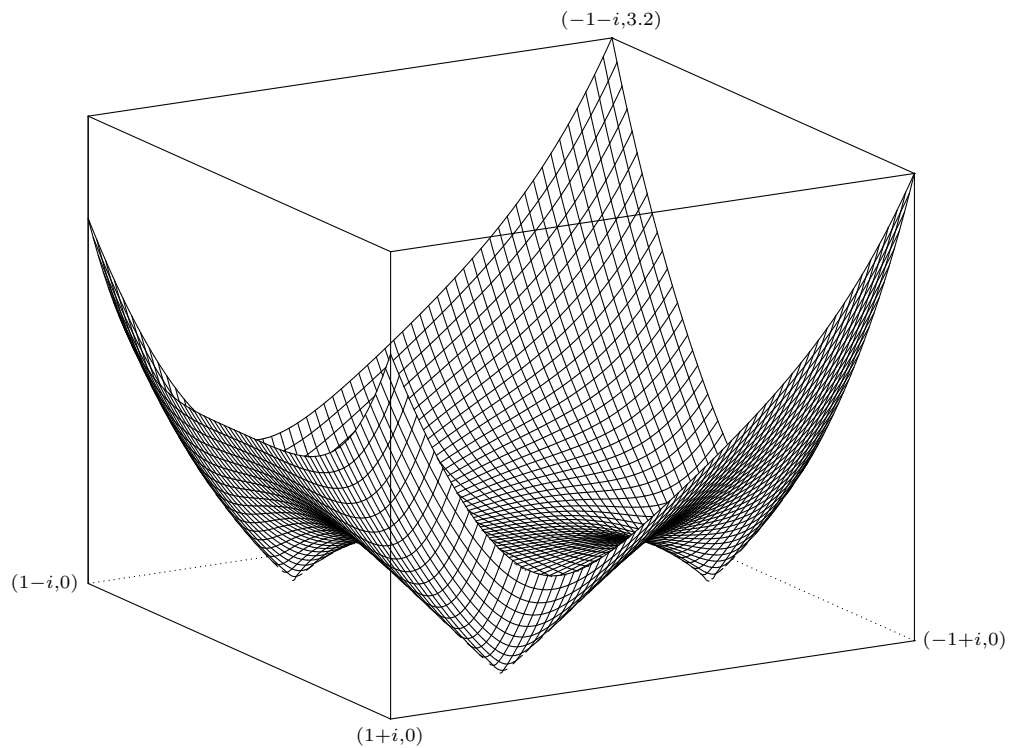
angle  $(60^\circ, 15^\circ)$     ratio 1 : 1 : 2



(9)

$$|z^3 + 1/2| \quad (z = x + yi, \quad -1 \leq x \leq 1, \quad -1 \leq y \leq 1)$$

angle  $(60^\circ, 15^\circ)$     ratio 1 : 1 : 0.5

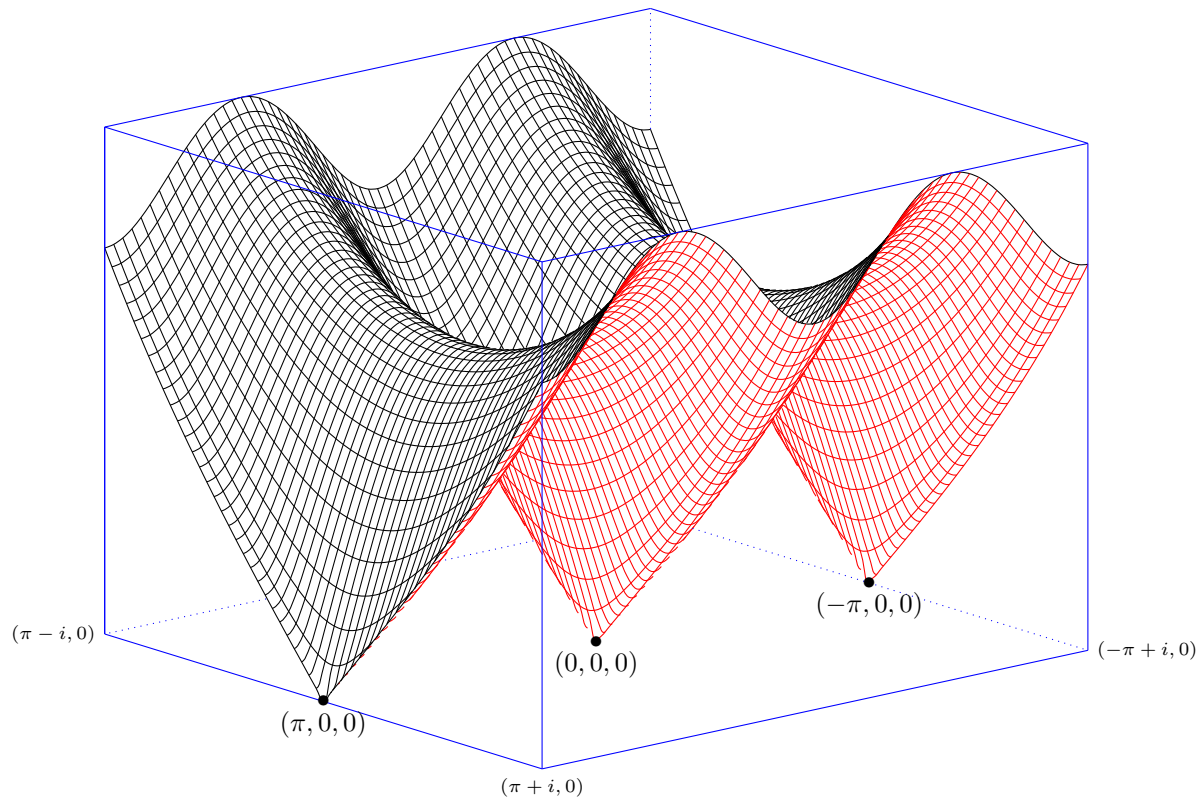


(10)

$$|\sin(z)| \quad (z = x + yi, -\pi \leq x \leq \pi, -1 \leq y \leq 1)$$

angle  $(50^\circ, 15^\circ)$  ratio  $1 : 3 : 3$

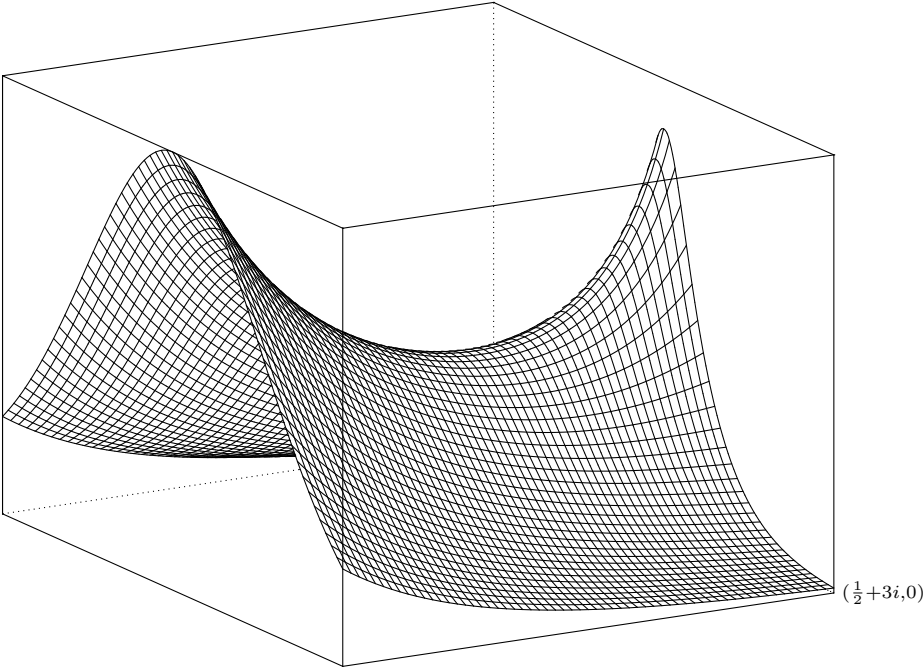
$$(-\pi - i, 1.543)$$



$$|\Gamma(z)| \quad (z = x + yi, \frac{1}{2} \leq x \leq 3, -3 \leq y \leq 3)$$

angle (60°, 15°)    ratio 1 : 0.5 : 1

$$(\frac{1}{2}-3i, 2)$$



(12)

$$(3-3i, 0)$$

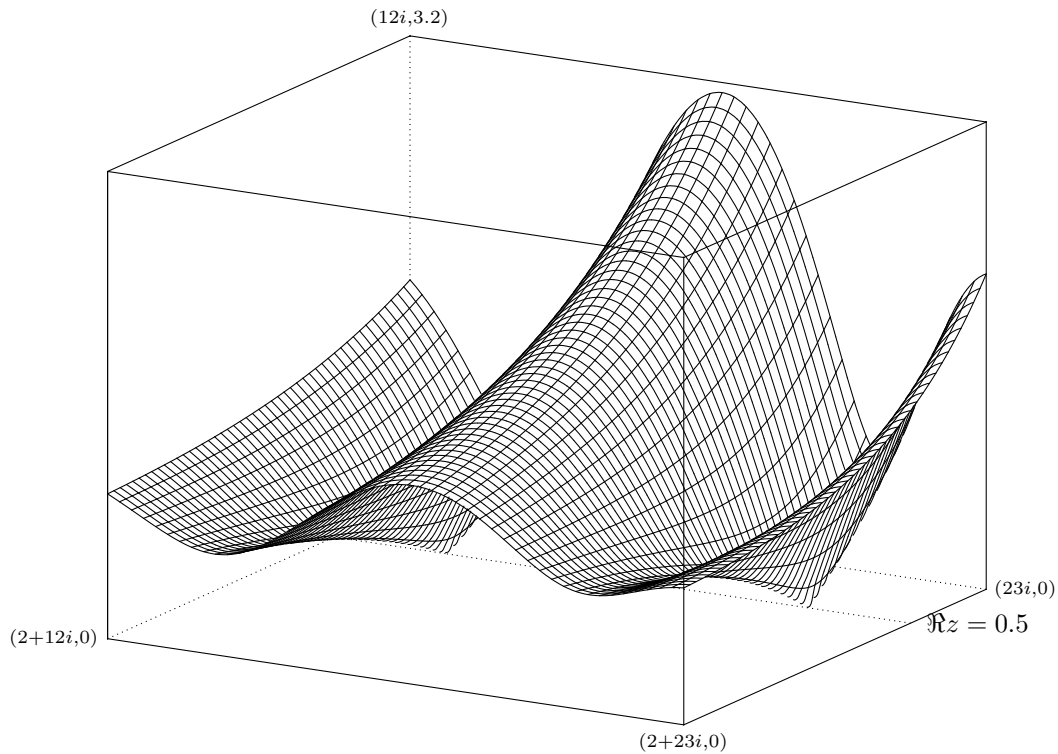
$$(3+3i, 0)$$

$$(\frac{1}{2}+3i, 0)$$

$$|\zeta(z)| \quad (z = x + yi, \ 0 \leq x \leq 2, \ 12 \leq y \leq 23)$$

angle  $(30^\circ, 15^\circ)$     ratio 1 : 0.2 : 0.5

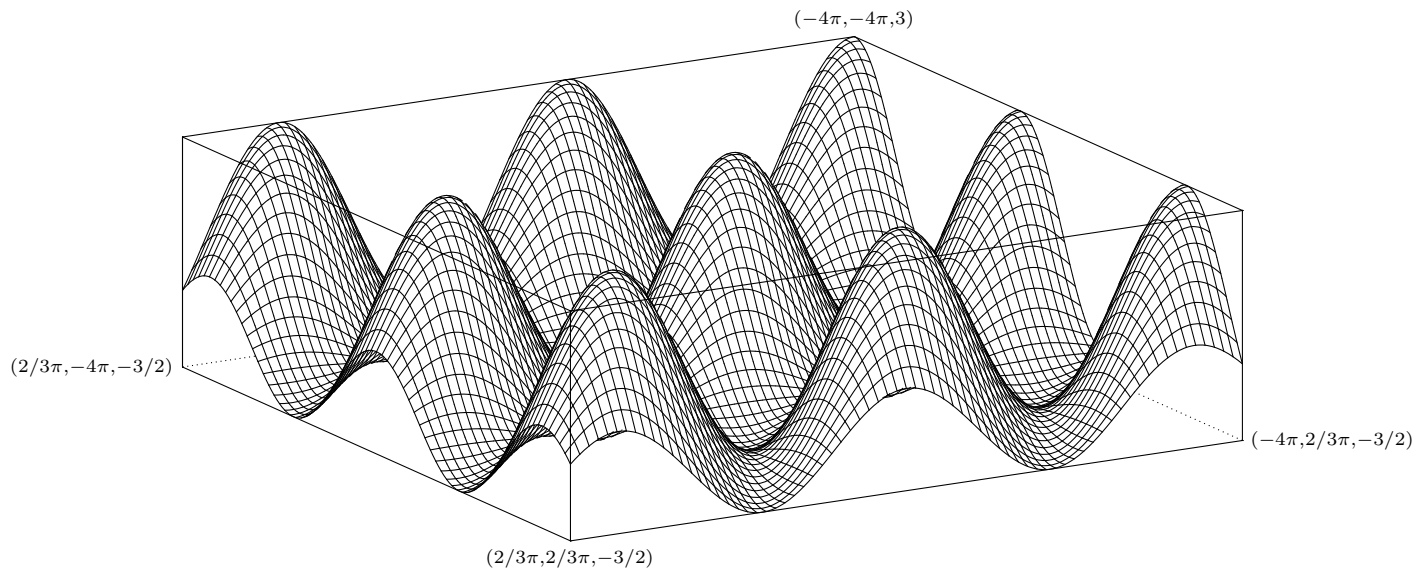
(13)



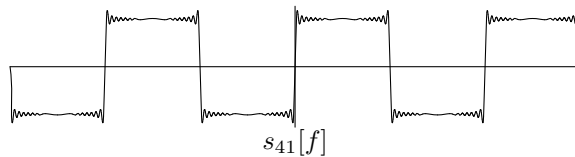
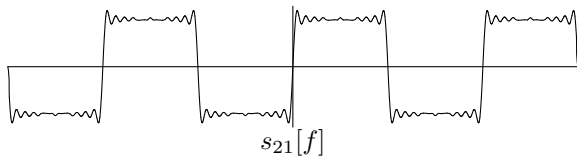
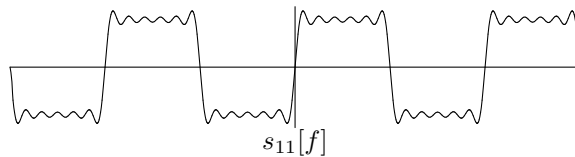
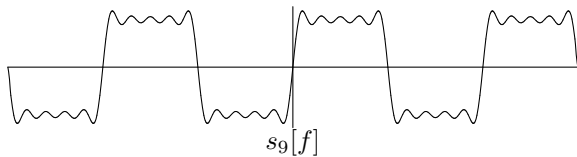
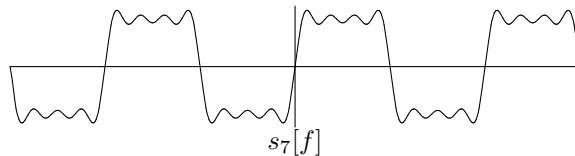
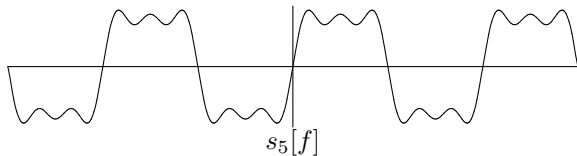
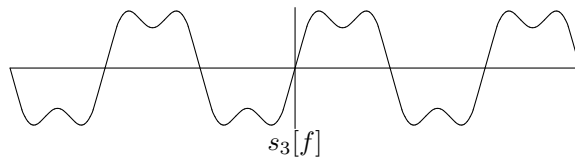
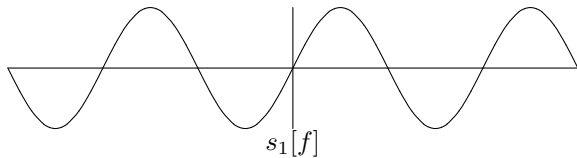
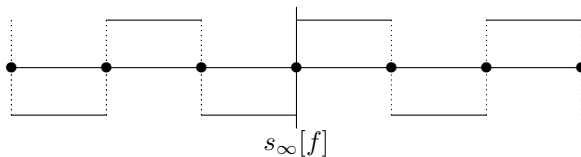
$$z = \cos(x) + \cos(y) + \cos(x - y) \quad (-4\pi \leq x \leq 2/3\pi, -4\pi \leq y \leq 2/3\pi)$$

angle  $(60^\circ, 15^\circ)$

(14)



$$s_{2n-1}[f] = \frac{4}{\pi} \left( \sin x + \frac{\sin 3x}{3} + \frac{\sin 5x}{5} + \cdots + \frac{\sin(2n-1)x}{2n-1} \right)$$



Graphs are obtained by the following commands:

Using  $\text{\texttt{Xy-pic}}$  ( $\text{\texttt{TikZ=0}}$ )

```
(1) os_md.xygraph(x^2,0,[-1.5,1.5],[-1.5,1.5],[-0.5,2.3]|dviout=1,ax=[0,0,1,1,1],scale=15);
os_md.xygraph(1/x,0,[-3,3],[-3,3],[-3,3]|dviout=1,ax=[0,0,1,1],scale=10,axopt=@"{.}");
(2) F=[(1+cos(x))*cos(x),(1+cos(x))*sin(x)]$
os_md.xygraph(F,48,[-@pi,@pi],[-0.5,2.5],[-1.5,1.5]|dviout=1,scale=20);
G=[sin(2*x),sin(3*x)]$
os_md.xygraph(G,-48,[-@pi,@pi],[-1.2,1.2],[-1.2,1.2]|dviout=1,scale=20,ax=[0,0]);
(3) F3=[u,[v,dsin,x],[w,os_md.abs,2*v],[z,dfloor,w],[u,0,-z+w]];
os_md.xygraph(F3,0,[0,5],[0,5],[0,1]|dviout=1,scale=20,prec=[4,0,1],ax=[0,0,1,1,0]);
(4) F4=[w,[z,os_md.zeta,1/2+@i*x],[w,os_md.abs,z]];
os_md.xygraph(F4,-64,[0,60],[0,60],[0,4]|dviout=1,scale=[2.5,10],prec=6,ax=[0,0,10,1,1]);
(5) os_md.xy2graph(x^2-y^2,-60,[-1,1],[-1,1],[-5,5],0,0|scale=40,dviout=3,ax=[-1,1,-6],dev=32);
(6) os_md.xy2graph(-x^3-y^3,-48,[-1,1],[-1,1],[-10,10],0,-35|scale=45,dviout=3);
(7) os_md.xy2graph(x^4+y^4-x*y,-48,[-1,1],[-1,1],[-10,10],120,0|dviout=3,ax=[-1/8,3,-6],dev=64,scale=25);
(8) os_md.xy2graph((x-y)/(x^2+y^2+2),-60,[-5,5],[-5,5],[-5,5],60,10|scale=[10,60],dviout=3,ax=[-1/2,1/2,-6],
pt=[[1,-1,0.5],0,"*!D{(1,-1,0.5)}"],[[-1,1,-0.5],0,"*!U{(-1,1,-0.5)}"]]);
(9) F9=exp(-x)*(sin(x)+cos(y));
os_md.xy2graph(F9,-48,[0,2*@pi],[0,2*@pi],[-5,5],0,0|scale=[15,30],dviout=3,ax=[-1,1,-6],dev=32);
(10) os_md.xy2graph(z^3+1/2,-60,[-1,1],[-1,1],[-5,8],0,0|scale=[40,20,40],ax=[0,3.2,-6],dviout=3);
(11) os_md.xy2graph(sin(z),-60,[-@pi,@pi],[-1,1],[-5,8],50,0|scale=[15,45,45],ax=[0,1.543,-6],dviout=3,
pt=[[[@pi,0,0],0,"*!U{(\pi,0,0)}"],[[0,0,0],0,"*!U{(0,0,0)}"],[[-@pi,0,0],0,"*!U{(-\pi,0,0)}"],
[[@pi,0,0],[-@pi,0,0],2]]]);
(12) FC=[w,[u,os_md.gamma,x+y*@i],[w,os_md.abs,u]];
os_md.xy2graph(FC,-60,[1/2,3],[1/2,3],[-10,10],0,0|dviout=3,ax=[0,2,-6],scale=[30,30,15],title="\Gamma(z)");
(13) FD=[w,[v,os_md.zeta,x+y*@i],[w,os_md.abs,v]];
os_md.xy2graph(FD,-48,[0,2],[12,23],[-10,20],30,0|scale=[40,20,8],dviout=3,ax=[0,3.2,-6],org=[0,17,0],
pt=[[1/2,12,0],[1/2,23,0],-2],[[1/2,23,0],"","*!L{\Re z=0.5}"]],title="\zeta(z)");
(14) os_md.xy2graph(cos(x)+cos(y)+cos(x-y),-72,[-4*@pi,2/3*@pi],[-4*@pi,2/3*@pi],[-10,10],0,0|dviout=3,scale=7,
ax=[-3/2,3,-6]);
(15) N=5$for(S=0,I=0;I<=N;I+=2) S+=sin(I*x)/I; /* N=1,2,3,4,5,6,11,21 */
os_md.xygraph(S,-96,[-3*@pi,3*@pi],0,[-4,4]|prec=6,dviout=1,scale=[4,6],ax=[0,0]);
```

## Using TikZ (TikZ=1)

```

(1) os_md.xygraph(x^2,0,[-1.5,1.5],[-1.5,1.5],[-0.5,2.3]|dviout=1,ax=[0,0,1,1,1],scale=1.5);
os_md.xygraph(1/x,0,[-3,3],[-3,3],[-3,3]|dviout=1,ax=[0,0,1,1],axopt="dotted");
(2) F=[(1+cos(x))*cos(x),(1+cos(x))*sin(x)]$
os_md.xygraph(F,48,[-@pi,@pi],[-0.5,2.5],[-1.5,1.5]|dviout=1,scale=2);
G=[sin(2*x),sin(3*x)]$
os_md.xygraph(G,-48,[-@pi,@pi],[-1.2,1.2],[-1.2,1.2]|dviout=1,scale=2,ax=[0,0]);
(3) F3=[u,[v,dsin,x],[w,os_md.abs,2*v],[z,dfloor,w],[u,0,-z+w]];
os_md.xygraph(F3,0,[0,5],[0,5],[0,1]|dviout=1,scale=2,prec=[4,0,1],ax=[0,0,1,1,0]);
(4) F4=[w,[z,os_md.zeta,1/2+@i*x],[w,os_md.abs,z]];
os_md.xygraph(F4,-64,[0,60],[0,60],[0,4]|dviout=1,scale=[0.25,1],prec=6,ax=[0,0,10,1,1]);
(5) os_md.xy2graph(x^2-y^2,-60,[-1,1],[-1,1],[-5,5],0,0|scale=4,dviout=3,ax=[-1,1,-6],dev=32);
(6) os_md.xy2graph(-x^3-y^3,-48,[-1,1],[-1,1],[-10,10],0,-35|scale=4.5,dviout=3);
(7) os_md.xy2graph(x^4+y^4-x*y,-48,[-1,1],[-1,1],[-10,10],120,0|dviout=3,ax=[-1/8,3,-6],dev=64,scale=2.5);
(8) os_md.xy2graph((x-y)/(x^2+y^2+2),-60,[-5,5],[-5,5],[-5,5],60,10|scale=[1,6],dviout=3,ax=[-1/2,1/2,-6],
pt=[[1,-1,0.5],0,1],[1,["above","$(1,-1,0.5)$"]],[[-1,1,-0.5],0,1],[1,["below","$(-1,1,-0.5)$"]]]);
(9) F9=exp(-x)*(sin(x)+cos(y));
os_md.xy2graph(F9,-48,[0,2*@pi],[0,2*@pi],[-5,5],0,0|scale=[1.5,3],dviout=3,ax=[-1,1,-6],dev=32);
(10) os_md.xy2graph(z^3+1/2,-60,[-1,1],[-1,1],[-5,8],0,0|scale=[4,2,4],ax=[0,3.2,-6],dviout=3);
(11) os_md.xy2graph(sin(z),-60,[-@pi,@pi],[-1,1],[-5,8],50,0|scale=[1.5,4.5,4.5],ax=[0,1.543,-6],dviout=3,
pt=[[[@pi,0,0],0,1],[1,["below","$(\pi,0,0)$"]],[[0,0,0],0,1],[1,["below","$(0,0,0)$"]],
[[-@pi,0,0],0,1],[1,["below","$(-\pi,0,0)$"]],[[@pi,0,0],[-@pi,0,0],2]],opt=["black","red","blue"]);
(12) FC=[w,[u,os_md.gamma,x+y*@i],[w,os_md.abs,u]];
os_md.xy2graph(FC,-60,[1/2,3],[-3,3],[-10,10],0,0|dviout=3,ax=[0,2,-6],scale=[3,3,1.5],title="\Gamma(z)");
(13) FD=[w,[v,os_md.zeta,x+y*@i],[w,os_md.abs,v]];
os_md.xy2graph(FD,-48,[0,2],[12,23],[-10,20],30,0|scale=[40,20,8],dviout=3,ax=[0,3.2,-6],org=[0,17,0],
pt=[[1/2,12,0],[1/2,23,0],-2],[[1/2,23,0],["below","$\Re z=0.5$"]]],title="\zeta(z)");
(14) os_md.xy2graph(cos(x)+cos(y)+cos(x-y),-72,[-4*@pi,2/3*@pi],[-4*@pi,2/3*@pi],[-10,10],0,0|dviout=3,scale=0.7,
ax=[-3/2,3,-6]);
(15) N=5$for(S=0,I=0;I<=N;I+=2) S+=sin(I*x)/I; /* N=1,2,3,4,5,6,11,21 */
os_md.xygraph(S,-96,[-3*@pi,3*@pi],0,[-4,4]|prec=6,dviout=1,scale=[0.4,0.6],ax=[0,0]);

```