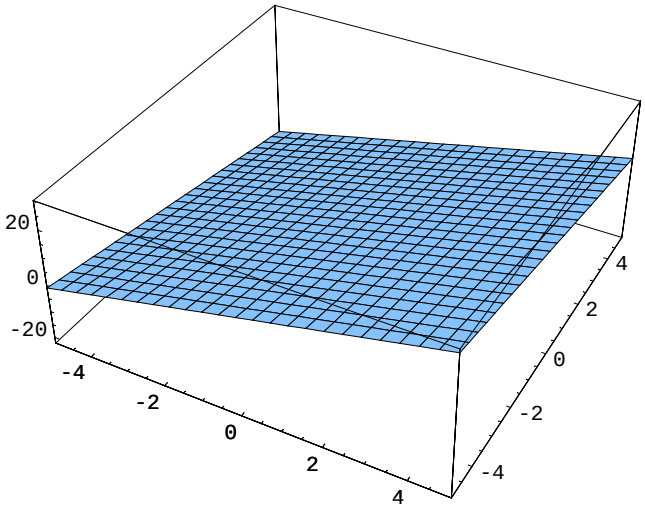
In[1]:= **f[x_,y_]=3x-2y+4**

Out[1]= 4 + 3 x − 2 y

In[2]:= **Plot3D[f[x,y],{x,-5,5},{y,-5,5}]**



Out[2]= **-** SurfaceGraphics **-**

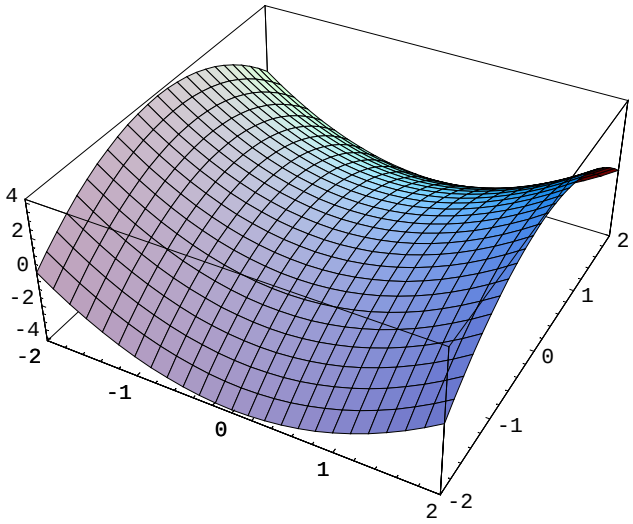
In[3]:= **f[0, 0.5]**

Out[3]= 3.

In[4]:= **g[x_,y_]=x^2-y^2**

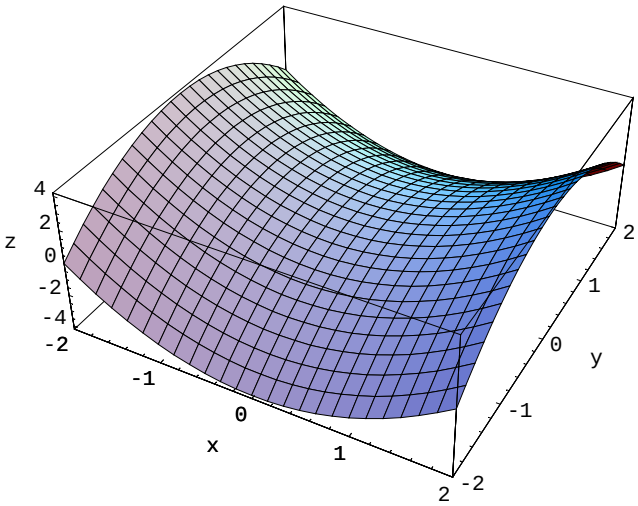
Out[4]= $x^2 - y^2$

In[5]:= **Plot3D[g[x,y],{x,-2,2},{y,-2,2}]**



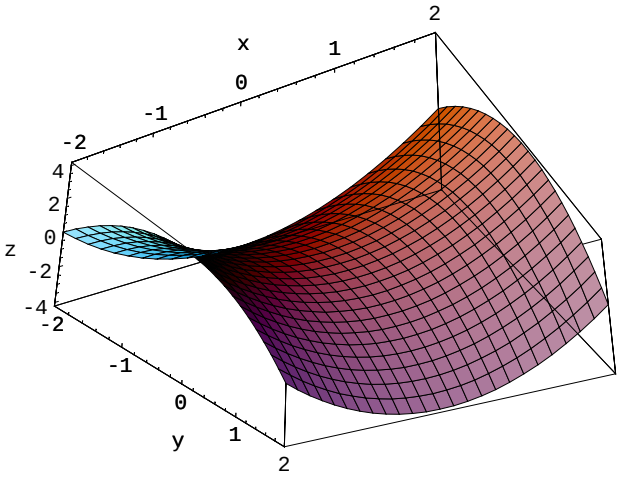
Out[5]= - SurfaceGraphics -

In[6]:= **Plot3D[g[x,y],{x,-2,2},{y,-2,2},AxesLabel->{"x","y","z"}]**



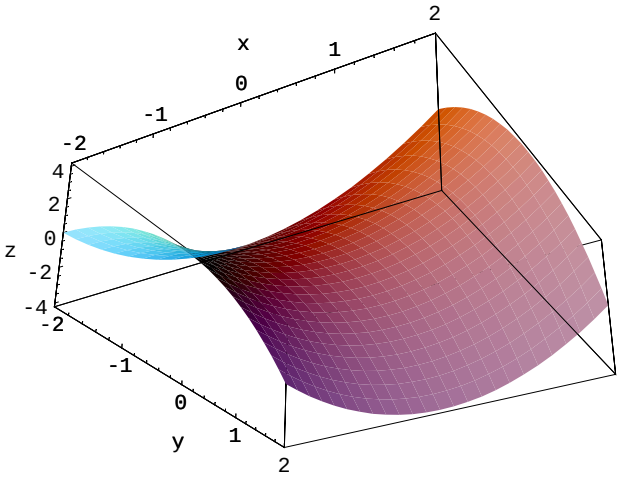
Out[6]= - SurfaceGraphics -

In[7]:=
```
Plot3D[g[x,y],{x,-2,2},{y,-2,2},AxesLabel->{"x","y","z"},
ViewPoint->{1.466,-2.560,-1.658}]
```



Out[7]= - SurfaceGraphics -

In[8]:=
```
Plot3D[g[x,y],{x,-2,2},{y,-2,2},AxesLabel->{"x","y","z"},
ViewPoint->{1.466,-2.560,-1.658},Mesh->False]
```



Out[8]= - SurfaceGraphics -

In[9]:=
```
g[0,0]
```

Out[9]= 0

In[10]:=
```
g[1,0.5]
```

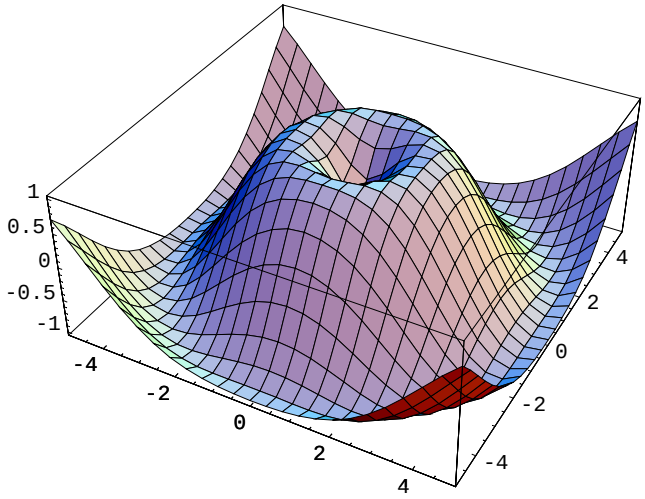
Out[10]= 0.75

In[11]:=
```
Clear[f,g]
```

In[12]:= **f[x_,y_]=Sin[Sqrt[x^2+y^2]]**

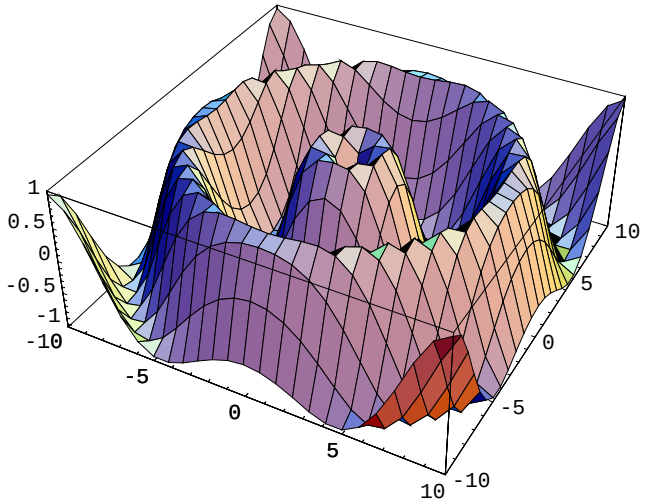
Out[12]= $\text{Sin}\left[\sqrt{x^2+y^2}\right]$

In[13]:= **Plot3D[f[x,y],{x,-5,5},{y,-5,5}]**



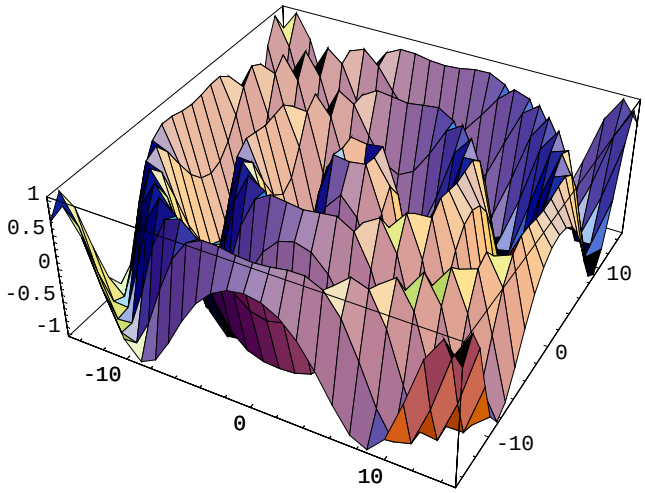
Out[13]= - SurfaceGraphics -

In[14]:= **Plot3D[f[x,y],{x,-10,10},{y,-10,10}]**



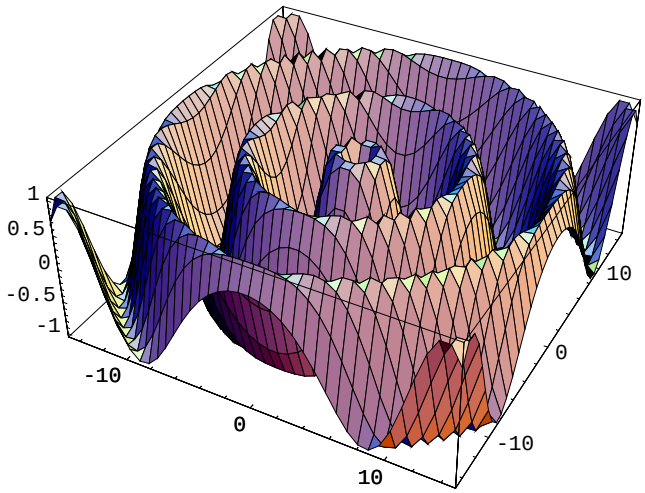
Out[14]= - SurfaceGraphics -

In[15]:= **Plot3D[f[x,y],{x,-15,15},{y,-15,15}]**



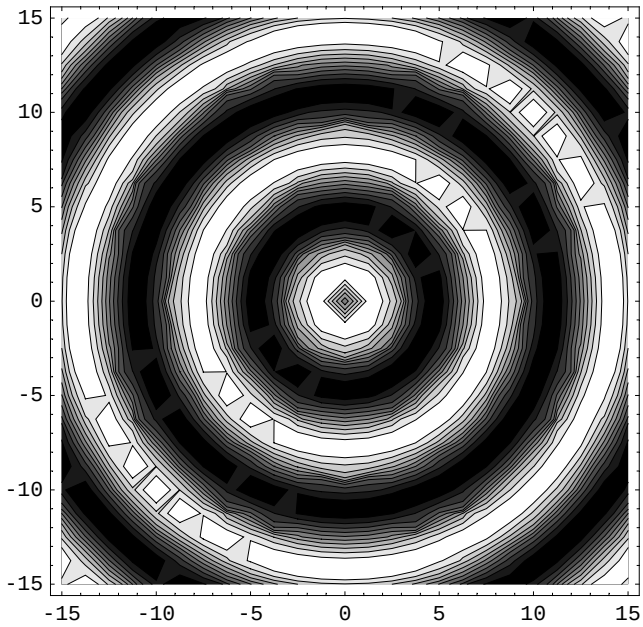
Out[15]= **-** SurfaceGraphics **-**

In[16]:= **Plot3D[f[x,y],{x,-15,15},{y,-15,15},PlotPoints->40]**



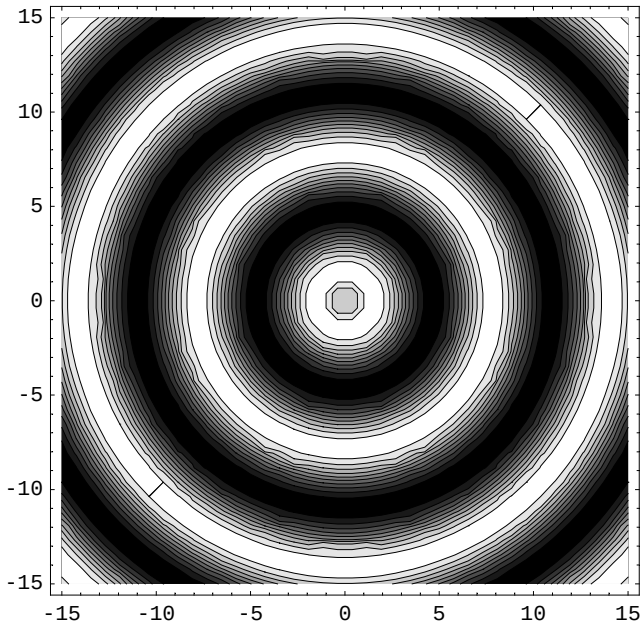
Out[16]= **-** SurfaceGraphics **-**

In[17]:= **ContourPlot[f[x,y],{x,-15,15},{y,-15,15}]**



Out[17]= **-** ContourGraphics **-**

In[18]:= **ContourPlot[f[x,y],{x,-15,15},{y,-15,15},PlotPoints->40]**

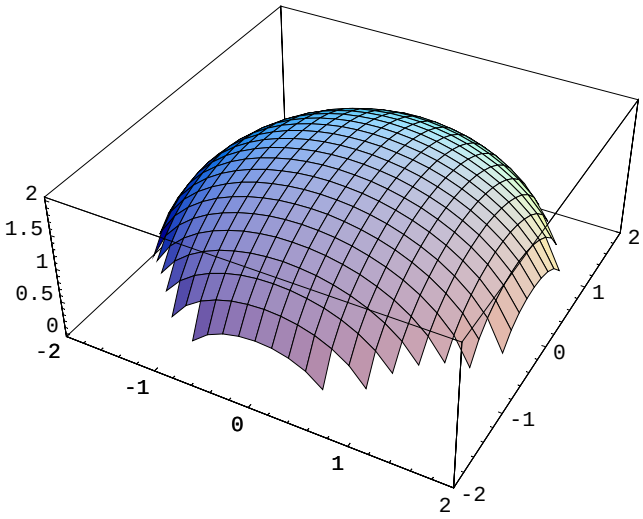


Out[18]= **-** ContourGraphics **-**

In[19]:= **g[x_,y_]=Sqrt[4-x^2-y^2]**

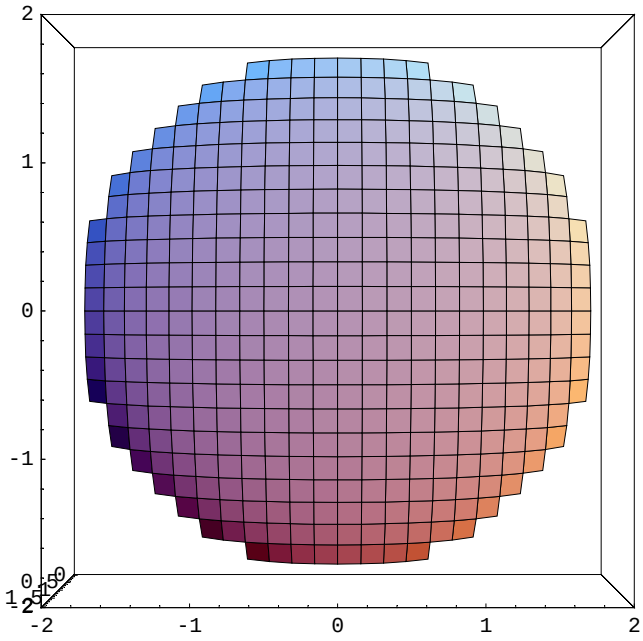
Out[19]= $\sqrt{4 - x^2 - y^2}$

In[20]:=
```
Plot3D[g[x,y],{x,-2,2},{y,-2,2}]
```



Out[20]= - SurfaceGraphics -

In[21]:=
```
Plot3D[g[x,y],{x,-2,2},{y,-2,2},
ViewPoint->{0.000,0.000,3.384}]
```

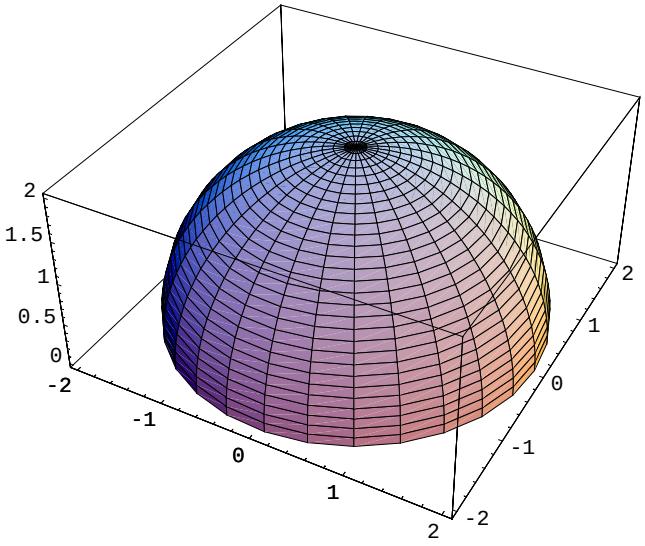


Out[21]= - SurfaceGraphics -

In[22]:=
```
r=2
```

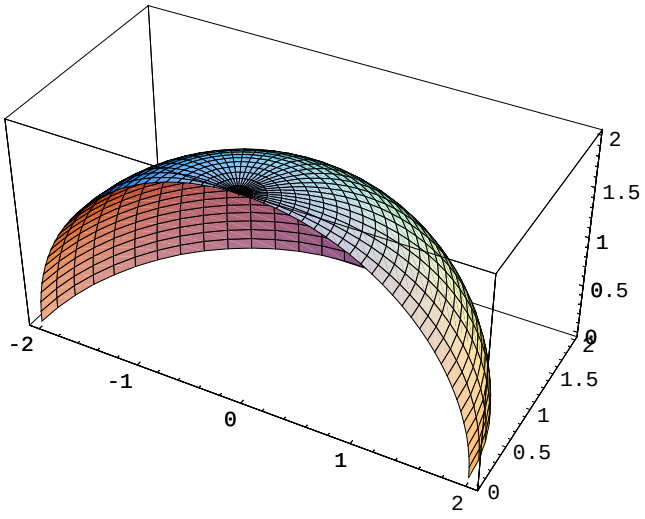
Out[22]= 2

In[23]:=
```
ParametricPlot3D[
{r*Cos[u]*Cos[v],r*Cos[u]*Sin[v],r*Sin[u]},
{u,0,Pi/2},{v,0,2Pi}]
```



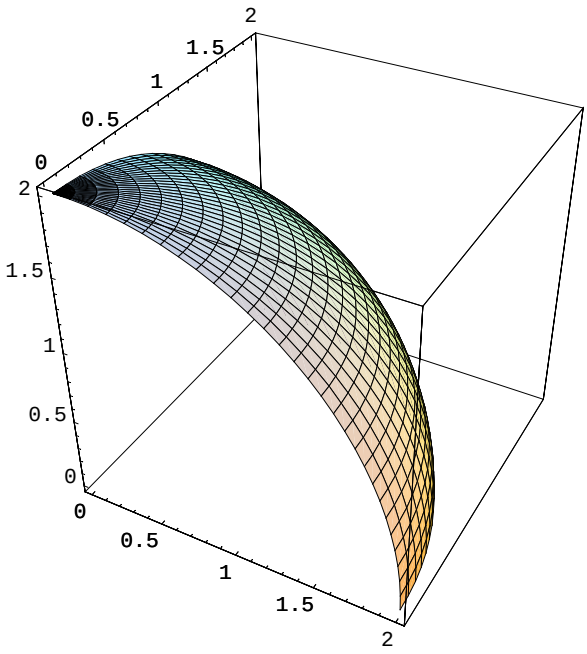
Out[23]= - Graphics3D -

In[24]:=
```
ParametricPlot3D[
{r*Cos[u]*Cos[v],r*Cos[u]*Sin[v],r*Sin[u]},
{u,0,Pi/2},{v,0,Pi}]
```



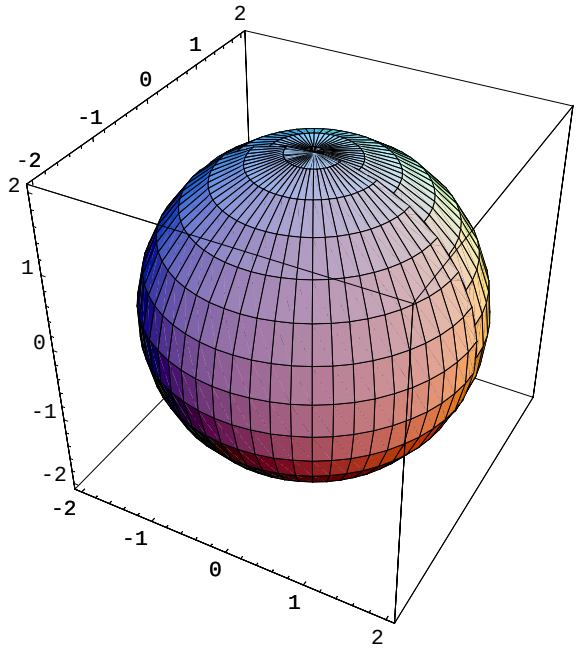
Out[24]= - Graphics3D -

In[25]:=
```
ParametricPlot3D[
{r*Cos[u]*Cos[v],r*Cos[u]*Sin[v],r*Sin[u]},
{u,0,Pi/2},{v,0,Pi/2}]
```



Out[25]= - Graphics3D -

In[26]:=
```
ParametricPlot3D[
{r*Cos[u]*Cos[v],r*Cos[u]*Sin[v],r*Sin[u]},
{u,0,2Pi},{v,0,Pi}]
```



Out[26]= - Graphics3D -

In[27]:=
```
Clear[f,g]
```

Nájdite dotykovú rovinu ku grafu funkcie f(x,y)=e^(2x^2+4y) v bode T[1,-1,?]

In[28]:= **f[x_,y_]=Exp[2x^2+4y]**

Out[28]= e^{2x^2+4y}

In[29]:= **xT=1**

Out[29]= 1

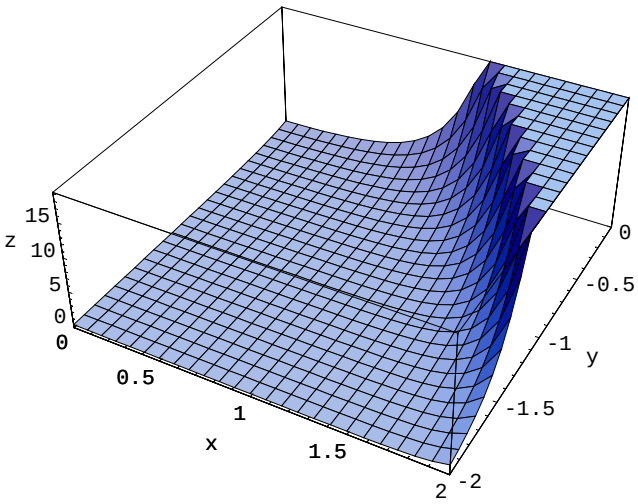
In[30]:= **yT=-1**

Out[30]= −1

In[31]:= **zT=f[xT,yT]**

Out[31]= $\frac{1}{e^2}$

In[32]:= **k1=Plot3D[f[x,y],{x,0,2},{y,-2,0},AxesLabel->{"x","y","z"}]**



Out[32]= - SurfaceGraphics -

In[33]:= **fx=D[f[x,y],x]**

Out[33]= $4\, e^{2x^2+4y}\, x$

In[34]:= **fy=D[f[x,y],y]**

Out[34]= $4\, e^{2x^2+4y}$

In[35]:= **fxT=fx/.x->xT/.y->yT**

Out[35]= $\frac{4}{e^2}$

In[36]:= **fyT=fy/.x->xT/.y->yT**

Out[36]= $\frac{4}{e^2}$

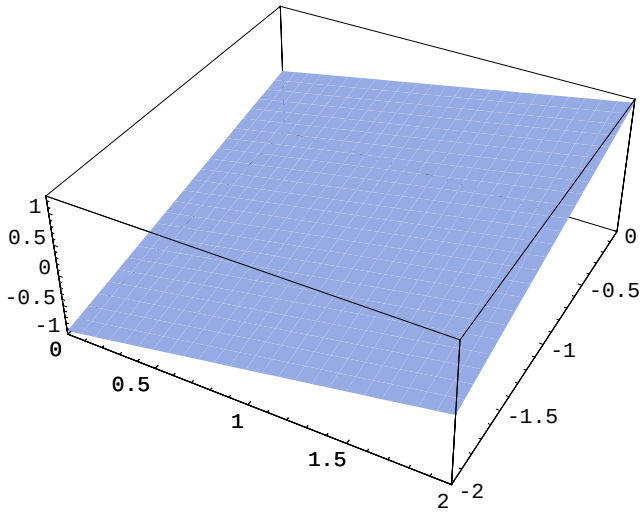
In[37]:= **r=Solve[fxT*(x-xT)+fyT*(y-yT)-(z-zT)==0,z]**

Out[37]= $\left\{\left\{z \to \frac{1 + 4\,x + 4\,y}{e^2}\right\}\right\}$

In[38]:= **g[x_,y_]=z/.r[[1]]**

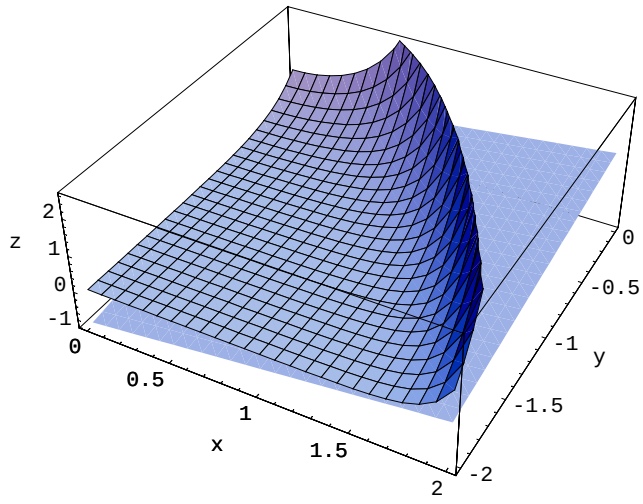
Out[38]= $\frac{1 + 4\,x + 4\,y}{e^2}$

In[39]:= **k2=Plot3D[g[x,y],{x,0,2},{y,-2,0},Mesh->False]**



Out[39]= - SurfaceGraphics -

In[40]:= **Show[k1,k2]**



Out[40]= - Graphics3D -