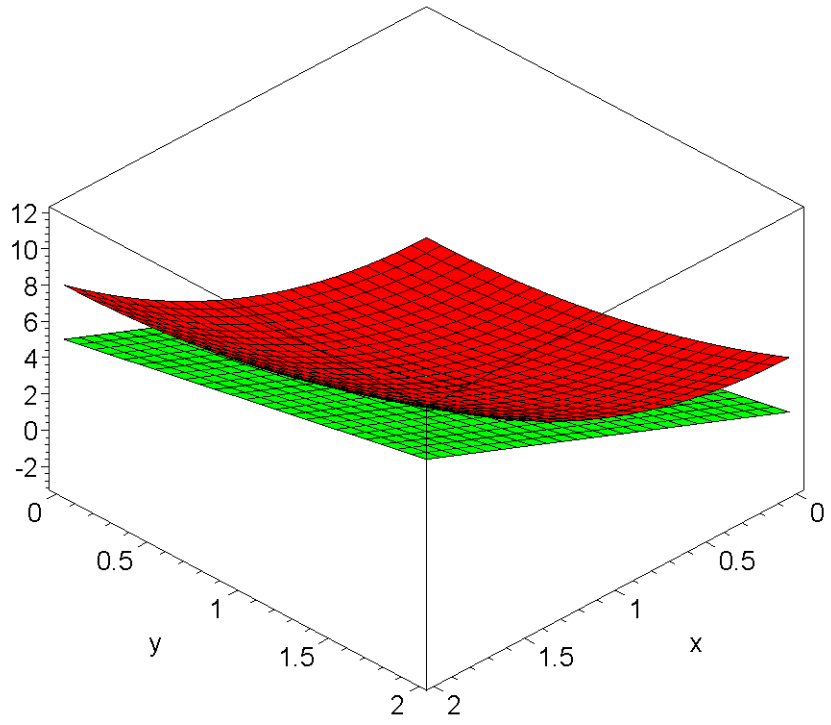
```
> restart:with( plots):
Warning, the name changecoords has been redefined

>
> g := (x, y) -> 2*x^2+y^2;
  xval := 1.0: yval:=1.0:
  gx := diff(g(x,y),x): gy := diff(g(x,y),y):
  xslope := subs({x=xval,y=yval}, gx):
  yslope := subs({x=xval,y=yval}, gy):
  tanplane := (x, y) ->
  g(xval,yval) + xslope*(x-xval) + yslope*(y-yval):
  tanplane(x,y);
  del := 1.:
  surfplot := plot3d(g(x,y), x = xval-del..xval+del,
  y = yval-del..yval+del, color=red):
  tanplot := plot3d(tanplane(x,y), x = xval-del..xval+del,
  y = yval-del..yval+del, color=green):
  display3d({surfplot, tanplot}, axes=boxed);
```

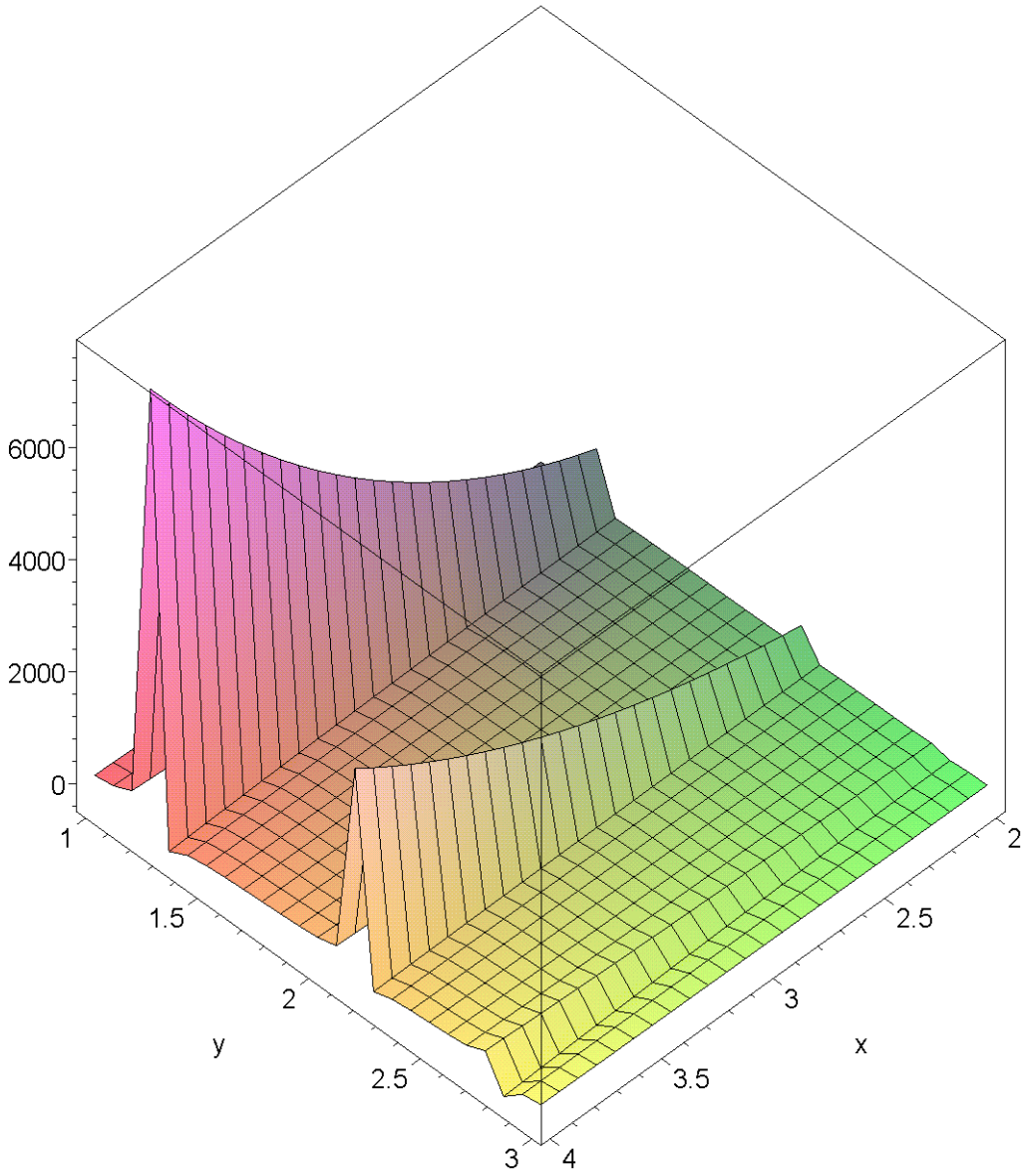
$$g := (x, y) \to 2\,x^2 + y^2$$

$$-3.00 + 4.0\,x + 2.0\,y$$




```
>
>
```

```
> 
> g := (x, y) -> exp(x) -y^3 + sin(x*y) + x^3*tan(y^2):
  a := 3: b:=2:
  del := 1:
  plot3d(g(x,y), x = a-del..a+del, y = b-del..b+del, axes=boxed);
```



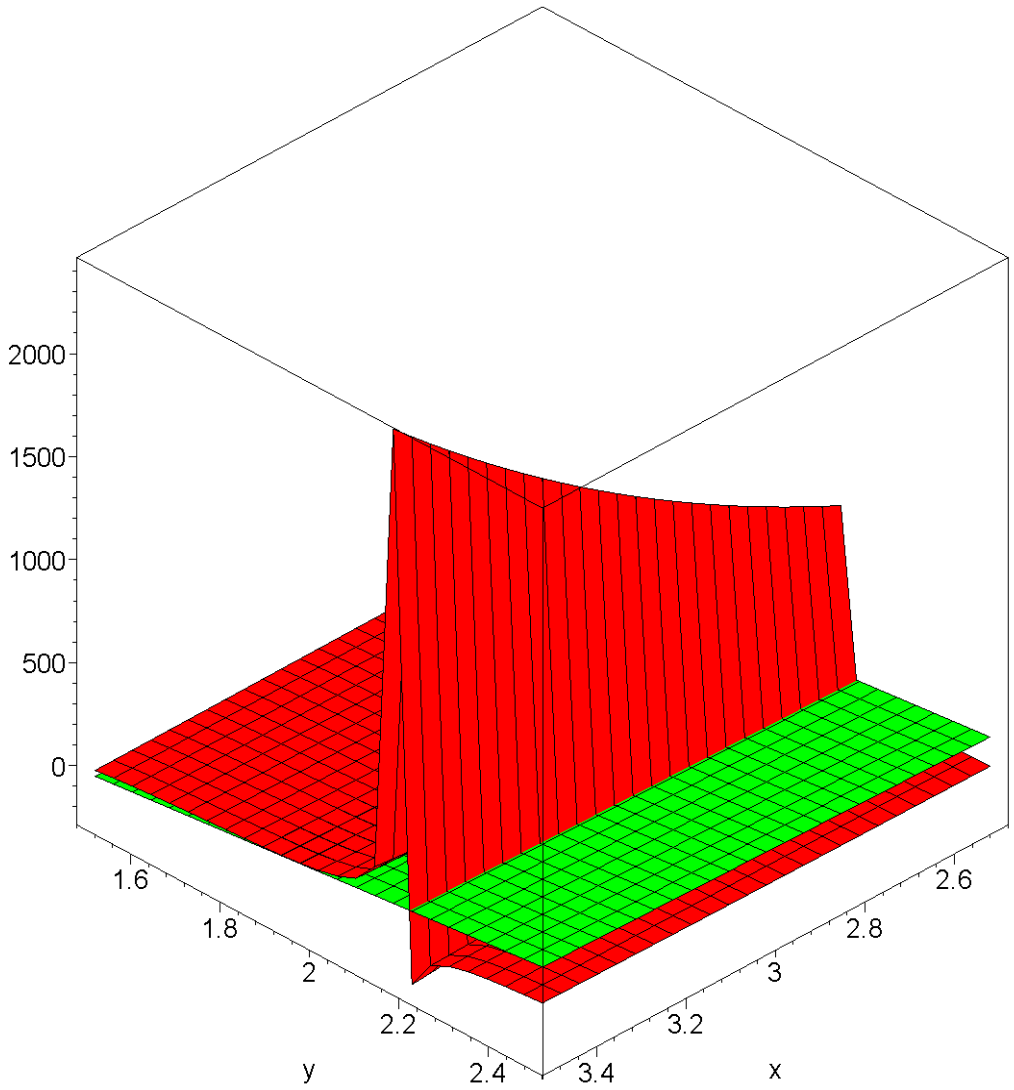

```
> g := (x, y) -> exp(x) -y^3 + sin(x*y) + x^3*tan(y^2);
  xval := 3.0: yval:=2.0:
  gx := diff(g(x,y),x): gy := diff(g(x,y),y):
  xslope := subs({x=xval,y=yval}, gx):
  yslope := subs({x=xval,y=yval}, gy):
```

```
tanplane := (x, y) ->
g(xval,yval) + xslope*(x-xval) + yslope*(y-yval):
tanplane(x,y);
del := .5:
surfplot := plot3d(g(x,y), x = xval-del..xval+del,
y = yval-del..yval+del, color=red):
tanplot := plot3d(tanplane(x,y), x = xval-del..xval+del,
y = yval-del..yval+del, color=green):
```

$$g := (x, y) \to \mathbf{e}^{x} - y^{3} + \sin(y\,x) + x^{3}\tan(y^{2})$$

$$-604.0537083 + 53.26705210\,x + 243.6599240\,y$$

```
> display3d({surfplot, tanplot}, axes=boxed);
```



> v
> v
> v