Řešení homogenních a nehomogenních soustav s nekonečně mnoha řešeními.

1.

```
> restart;
> HR1:=x+2*y=0;
```

$$HR1 := x + 2\,y = 0$$

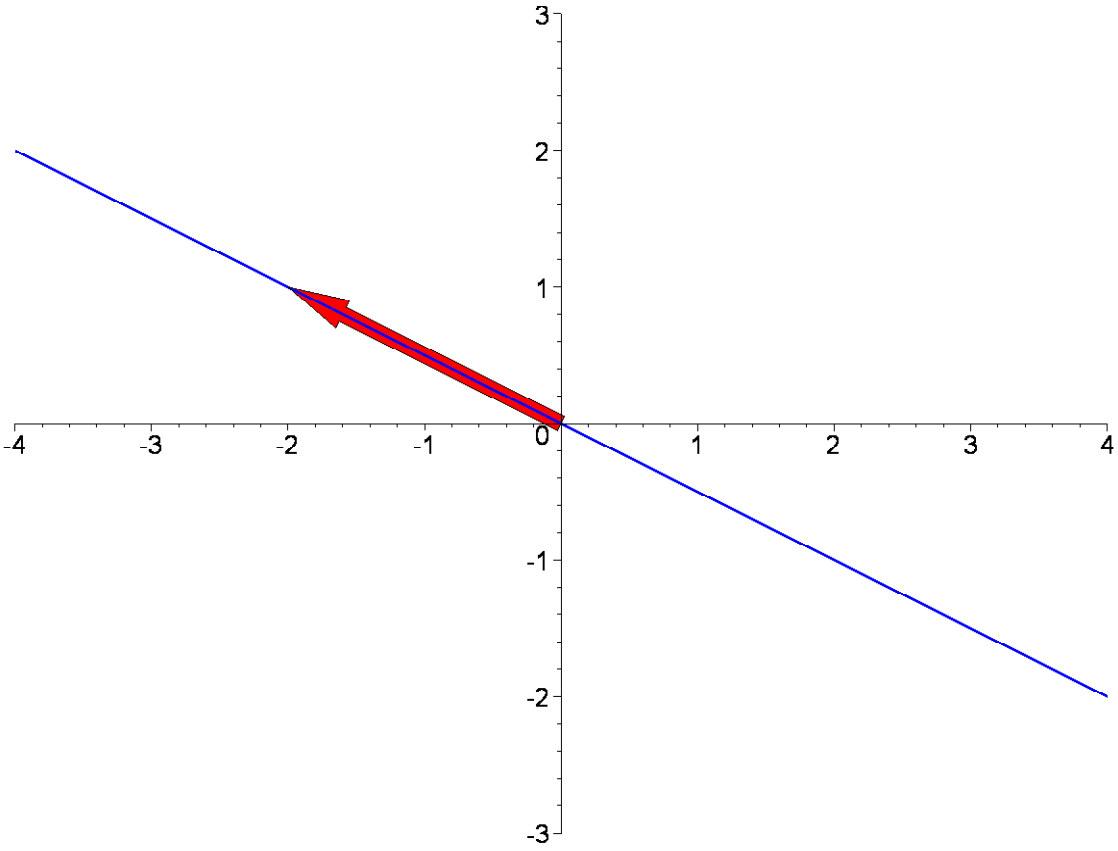
```
> resh1:=solve(HR1,{x,y});
```

$$resh1 := \{x = -2\,y,\ y = y\}$$

```
> Resh:=eval(eval([x,y],resh1),y=t);
```

$$Resh := [-2\,t,\ t]$$

```
> vect:=plots[arrow]([-2,1],color=red,scaling=constrained):
> resenih:=plot([op(Resh),t=-5..5],color=blue,thickness=3):
> plots[display](vect,resenih,view=[-4..4,-3..3]);
```




```
> R1:=x+2*y=3;
```

$$R1 := x + 2\,y = 3$$

```
> res1:=solve(R1,{x,y});
```

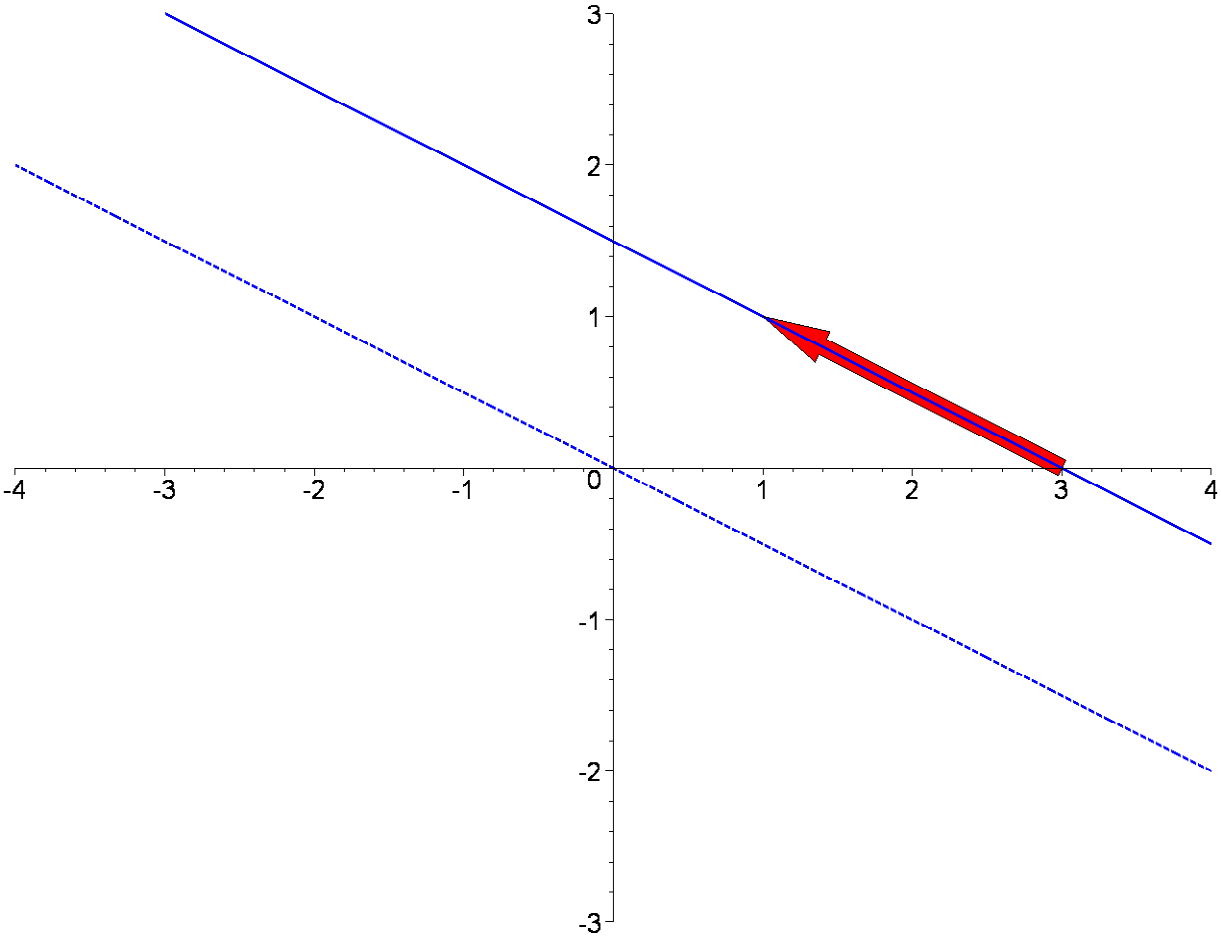
$$res1 := \{x = -2\,y + 3,\ y = y\}$$

```
> Res:=eval(eval([x,y],res1),y=t);
```

$$Res := [-2\,t + 3,\ t]$$

```
> vect:=plots[arrow]([3,0],[-2,1],color=red,scaling=constrained):
> resenih:=plot([op(Resh),t=-5..5],color=blue,thickness=3,linestyl
  e=dash):
```

```
> reseni:=plot([op(Res),t=-5..5],color=blue,thickness=3):
> plots[display](vect,reseni,resenih,view=[-4..4,-3..3]);
```



2.

```
> restart;
> HR2:=x-3*y+2*z=0;
```

$$HR2 := x - 3\,y + 2\,z = 0$$

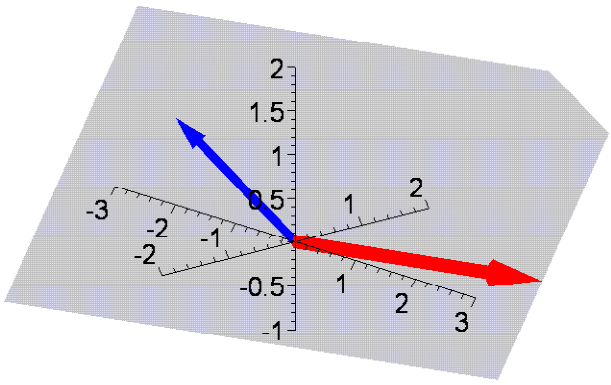
```
> resh1:=solve(HR2,{x,y,z});
```

$$resh1 := \{x = 3\,y - 2\,z, y = y, z = z\}$$

```
> Resh:=eval(eval([x,y,z],resh1),{y=s,z=t});
```

$$Resh := [3\,s - 2\,t, s, t]$$

```
> vect1:=plots[arrow]([3,1,0],color=red,scaling=constrained):
> vect2:=plots[arrow]([-2,0,1],color=blue,scaling=constrained):
> resenih:=plot3d(Resh,s=-3..4,t=-3..4,color=grey,thickness=1,styl
  e=patchnogrid):
> plots[display](vect1,vect2,resenih,axes=normal,view=[-3..3,-2..2
  ,-1..2],orientation=[-33,70]);
```




```
> R2:=x-3*y+2*z=3;
```

$$R2 := x - 3\,y + 2\,z = 3$$

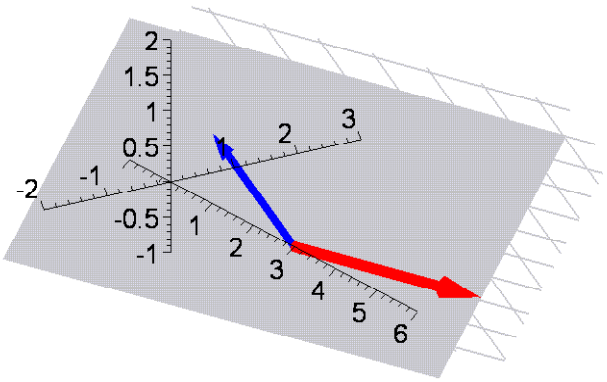
```
> res1:=solve(R2,{x,y,z});
```

$$res1 := \{x = 3\,y - 2\,z + 3,\ y = y,\ z = z\}$$

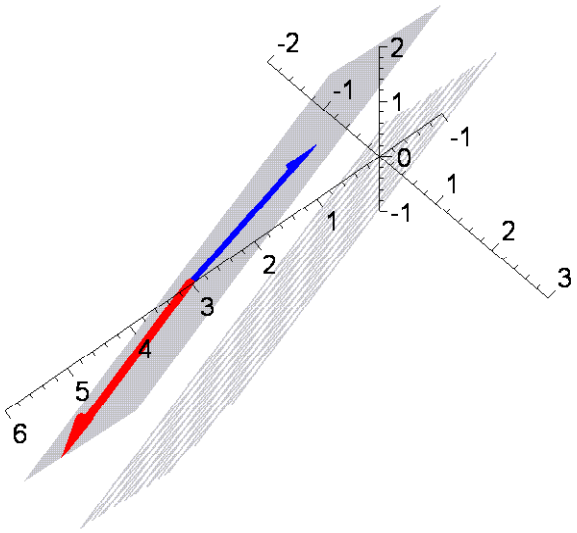
```
> Res:=eval(eval([x,y,z],res1),{y=s,z=t});
```

$$Res := [3\,s - 2\,t + 3,\ s,\ t]$$

```
> vect1:=plots[arrow]([3,0,0],[3,1,0],color=red,scaling=constrained):
> vect2:=plots[arrow]([3,0,0],[-2,0,1],color=blue,scaling=constrained):
> reseni:=plot3d(Res,s=-3..3,t=-2..3,color=grey,thickness=1,style=patchnogrid):
> resenih:=plot3d(Resh,s=-3..4,t=-3..4,color=grey,thickness=2,style=wireframe):
> plots[display](vect1,vect2,reseni,resenih,axes=normal,view=[-1..6,-2..3,-1..2],orientation=[-33,70]);
```




```
> plots[display](vect1,vect2,reseni,resenih,axes=normal,view=[-1..
  6,-2..3,-1..2],orientation=[75,45]);
```



3.

```
> restart;
> r1h:=-x+2*y+z=0; r2h:=x+y+2*z=0;
```

$$r1h := -x + 2\,y + z = 0$$

$$r2h := x + y + 2\,z = 0$$

```
> resh1:=solve({r1h,r2h},{x,y,z});
```

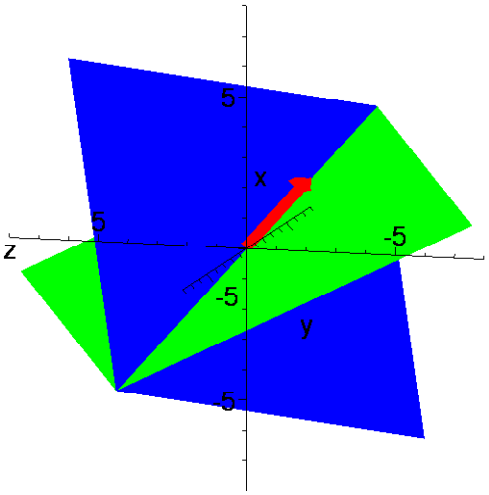
$$resh1 := \{x = -z,\ y = -z,\ z = z\}$$

```
> Res:=eval(eval([x,y,z],resh1),{z=t});
```

$$Res := [-t, -t, t]$$

```
> vect1:=plots[arrow](3*[-1,-1,1],color=red,width=0.5,scaling=cons
  trained):
> rovinyh:=plots[implicitplot3d]([r1h,r2h],x=-6..6,y=-6..6,z=-6..6
  ,color=[blue,green],style=[patchnogrid,patchnogrid],scaling=cons
  trained,orientation=[25,112],axes=normal):
> plots[display](rovinyh,vect1,view=[-8..8,-8..8,-8..8],orientatio
```

```
n=[75,100],tickmarks=[3,3,3]);
```




```
> r1:=-x+2*y+z=7; r2:=x+y+2*z=12;
```

$$r1 := -x + 2\,y + z = 7$$

$$r2 := x + y + 2\,z = 12$$

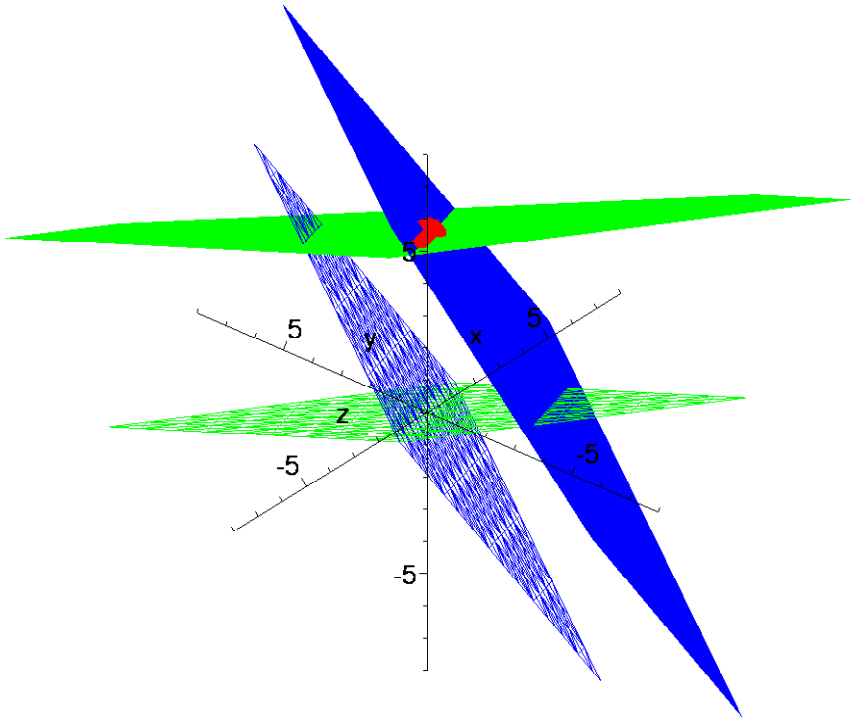
```
> res1:=solve({r1,r2},{x,y,z});
```

$$res1 := \{x = \frac{17}{3} - z,\ y = \frac{19}{3} - z,\ z = z\}$$

```
> Res:=eval(eval([x,y,z],res1),{z=t});
```

$$Res := \left[\frac{17}{3} - t,\ \frac{19}{3} - t,\ t\right]$$

```
> vect1:=plots[arrow]([17/3,19/3,0],3*[-1,-1,1],color=red,width=0.
  5,scaling=constrained):
> roviny:=plots[implicitplot3d]([r1,r2],x=-8..8,y=-8..8,z=-8..8,co
  lor=[blue,green],style=[patchnogrid,patchnogrid],scaling=constra
  ined,orientation=[25,112],axes=normal):
> rovinyh:=plots[implicitplot3d]([r1h,r2h],x=-6..6,y=-6..6,z=-6..6
  ,color=[blue,green],style=[wireframe,wireframe],scaling=constrai
  ned,orientation=[25,112],axes=normal):
> plots[display](roviny,rovinyh,vect1,view=[-8..8,-8..8,-8..8],ori
  entation=[50,120],tickmarks=[3,3,3]);
```


5
5
y
x
z
-5
-5
-5

>

>