```
(* 1. zadatak: X=(A^T-2E)^{-1}B^{-1}=(B(A^T-2E))^{-1}=M^{-1}   *)

A = {{0, 2, -1}, {0, 1, 0}, {1, -1, 3}}
{{0, 2, -1}, {0, 1, 0}, {1, -1, 3}}

B = {{2, 1, 0}, {1, 0, 1}, {0, 0, -1}}
{{2, 1, 0}, {1, 0, 1}, {0, 0, -1}}

M = B.(Transpose[A] - 2 IdentityMatrix[3])
{{-2, -1, 1}, {-3, 0, 2}, {1, 0, -1}}

X = Inverse[M]
{{0, -1, -2}, {-1, 1, 1}, {0, -1, -3}}

(* 2. zadatak, moze da se resi pomocu Kramerovog pravila: *)

Δ = Det[{{1, m, -1}, {m, 1, -1}, {1, -1, m}}]
```

$m - m^3$

```
Δx = Det[{{1, m, -1}, {1, 1, -1}, {-1, -1, m}}]
```

$-1 + 2\,m - m^2$

```
Δy = Det[{{1, 1, -1}, {m, 1, -1}, {1, -1, m}}]
```

$-1 + 2\,m - m^2$

```
Δz = Det[{{1, m, 1}, {m, 1, 1}, {1, -1, -1}}]
```

$-1 + m^2$

```
(* 1. slucaj za Δ≠0 ⇔ m≠0,1,-1 sistem ima jedinstveno resenje*)
{x, y, z} = {Simplify[Δx / Δ], Simplify[Δy / Δ], Simplify[Δz / Δ]}
```

$\left\{\frac{-1+m}{m\,(1+m)},\ \frac{-1+m}{m\,(1+m)},\ -\frac{1}{m}\right\}$

```
(* 2. slucaj, za m=0 ili m=-1 je Δx≠0 i Δ=0 pa sistem nema resenja *)

(* 3. slucaj, za m=1 sve determinante su 0,
pa zamenjujemo m=1 u polazni sistem i radimo Gausov metod eliminacije: *)
Clear[x, y, z]

Solve[{x + y - z == 1 && x + y - z == 1 && x - y + z == -1}, {x, y, z}]
```

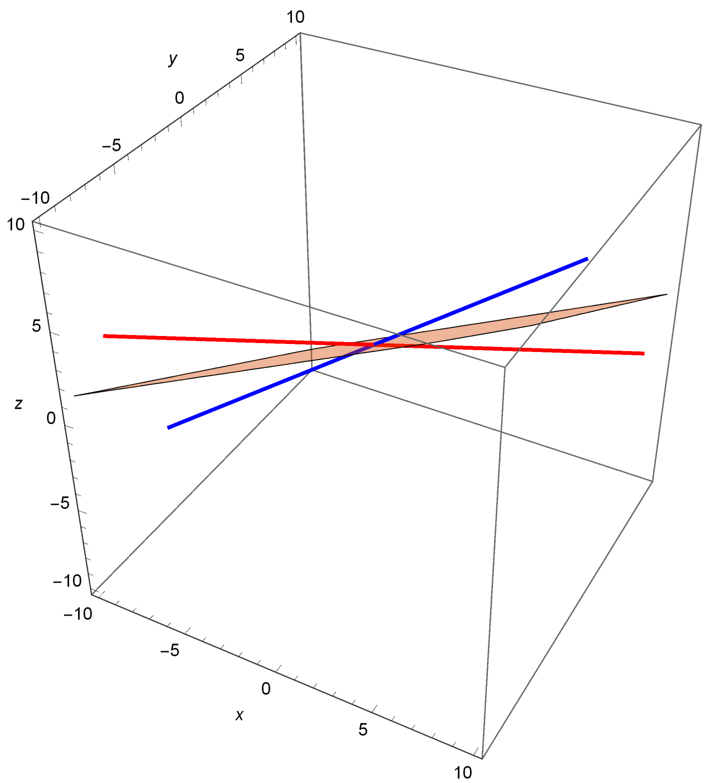
Solve::svars : Equations may not give solutions for all "solve" variables. ≫

$\{\{x \to 0,\ z \to -1 + y\}\}$

```
(* Sistem ima beskonacno mnogo resnjena, (x,y,z)∈{(0,t,-1+t)|t∈ℝ} za m=1. *)
```

```
(* 3. zadatak: prava p (plavo) i njena
   projekcija p'(crveno) u odnosu na ravan α na slici *)

Show[α = ContourPlot3D[x - y - 2 z == -3, {x, -10, 10},
   {y, -10, 10}, {z, -10, 10}, AxesLabel → {x, y, z}, Mesh → None,
   ContourStyle → Directive[Orange, Opacity[0.4], Specularity[White, 30]]],
 p = ParametricPlot3D[{t, 2 t - 1, 2}, {t, -10, 10},
   PlotStyle → RGBColor[0, 0, 1], AxesLabel → {x, y, z}],
 p' = ParametricPlot3D[{4 t, 5 t - 1, -2 t + 2}, {t, -10, 10},
   PlotStyle → RGBColor[1, 0, 0], AxesLabel → {x, y, z}]]
```



```
(* 4. zadatak: prava q (plavo), ravan α (narandzasto),
ravan β koja sadrzi q i normalna je na α (zeleno). Trazena
 prava p (crveno) prolazi kroz tacku M(0,0,-1) i ima
 pravac ortogonalne projekcije q na α (q'=α⋂β). *)

Show[α = ContourPlot3D[2 x + 3 y - z - 1 == 0, {x, -10, 10},
   {y, -10, 10}, {z, -10, 10}, AxesLabel → {x, y, z}, Mesh → None,
   ContourStyle → Directive[Orange, Opacity[0.4], Specularity[White, 30]]],
 β = ContourPlot3D[-5 x + 3 y - z + 6 == 0, {x, -10, 10}, {y, -10, 10},
   {z, -10, 10}, AxesLabel → {x, y, z}, Mesh → None,
   ContourStyle → Directive[Green, Opacity[0.4], Specularity[White, 30]]],
 q = ParametricPlot3D[{t + 3, 2 t + 3, t}, {t, -10, 10},
   PlotStyle → RGBColor[0, 0, 1], AxesLabel → {x, y, z}],
 p = ParametricPlot3D[{0, t, 3 t - 1}, {t, -10, 10},
   PlotStyle → RGBColor[1, 0, 0], AxesLabel → {x, y, z}]]
```