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In[34]:= f = x^2 + 2 y^2 - z
xmin = -5 ; xmax = 5 ;
ymin = -5 ; ymax = 5 ;
zmin = -5 ; zmax = 5 ;
Gf = Grad[f, {x, y, z}] (* gradient of f *)
ContourPlot3D[f, {x, xmin, xmax}, {y, ymin, ymax}, {z, zmin, zmax}]
cp = ContourPlot3D[f == 0, {x, xmin, xmax}, {y, ymin, ymax}, {z, zmin, zmax}]
vp = VectorPlot3D[Gf, {x, xmin, xmax}, {y, ymin, ymax}, {z, ymin, zmax}]
Show[{cp, vp}]

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Out[34]= $x^2 + 2 y^2 - z$

Out[38]= $\{2 x, 4 y, -1\}$







