In[ ]:= **Remove["Global`*"]**

In[ ]:= **eq = 17 x^2 − 4 x y − 10 x z + 20 y^2 + 4 y z + 17 z^2 == 72**

Out[ ]= $17 x^2 - 4 x y + 20 y^2 - 10 x z + 4 y z + 17 z^2 == 72$

eq in matrix for

In[ ]:= **Meq = {{17, −4, −10}, {−4, 20, 4}, {−10, 4, 17}}**

Out[ ]= {{17, -4, -10}, {-4, 20, 4}, {-10, 4, 17}}

In[ ]:= **MatrixForm[Meq]**

Out[ ]//MatrixForm=

$$\begin{pmatrix} 17 & -4 & -10 \\ -4 & 20 & 4 \\ -10 & 4 & 17 \end{pmatrix}$$

In[ ]:= **Eigenvalues[Meq]**

Out[ ]= $\left\{ \frac{1}{2} \times \left(47 + \sqrt{177} \right), \frac{1}{2} \times \left(47 - \sqrt{177} \right), 7 \right\}$

In[ ]:= **Eigenvectors[Meq]**

Out[ ]= $\left\{ \left\{ -1, \frac{2 \times \left(33 + \sqrt{177} \right)}{51 + 5 \sqrt{177}}, 1 \right\}, \left\{ -1, \frac{2 \times \left(-33 + \sqrt{177} \right)}{-51 + 5 \sqrt{177}}, 1 \right\}, \{1, 0, 1\} \right\}$

In[ ]:= **ContourPlot3D[eq, {x, −2, 2}, {y, −2, 2}, {z, −2, 2}]**

Out[ ]= ContourPlot3D[eq, {x, -2, 2}, {y, -2, 2}, {z, -2, 2}]