Solution (#1197) The associated symmetric matrix has eigenvalues $-50, 25, 25$. In terms of an orthogonal change of variable to new XYZ-co-ordinates the quadric's equation becomes

$$-50X^2 + 25Y^2 + 25Z^2 - \frac{28}{5\sqrt{5}}X + \frac{92}{\sqrt{74}}Y - \frac{928}{5\sqrt{222}}Z = 0$$

If we complete the squares in each variable we find the quadric is a hyperboloid of two sheets.