

Quiz #6; Wed, 3/2/2016

Math 53 with Prof. Stankova

Section 110; MWF12-1

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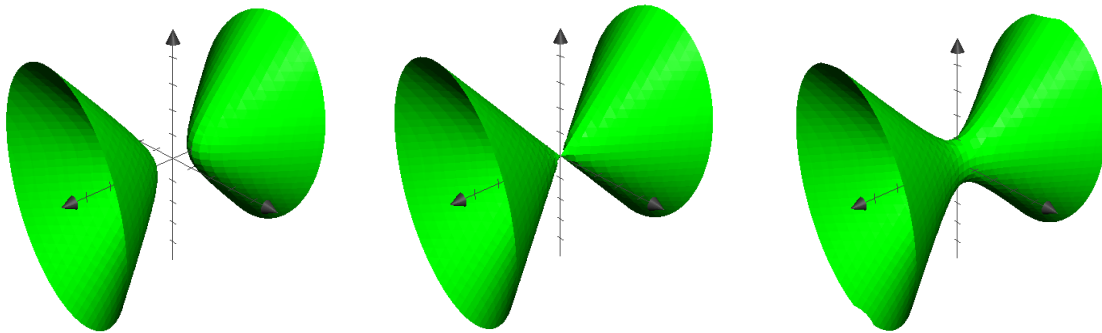
Student Name: _____

Problem. Describe the level surfaces of the function:

$$f(x, y, z) = x^2 - 2y^2 - z^2$$

Note that there are three different types (5 points for each type).

Solution. We try three cases, $k = 1, k = 0, k = -1$. These are as follows (in the respective order):



(If you could not draw these three cases, PLEASE REVIEW 12.5)

Hence, there are three types of level surfaces:

- (a) $k > 0$ we get an elliptic hyperboloid of 2 sheets.
- (b) $k = 0$ then we get an elliptic cone.
- (c) $k < 0$ then we get an elliptic hyperboloid of 1 sheet.