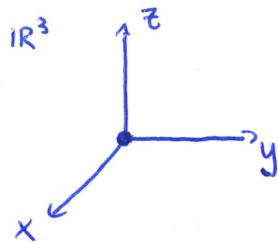
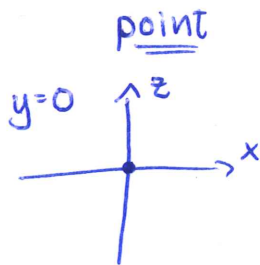


$$y - 2z^2 = 3x^2$$

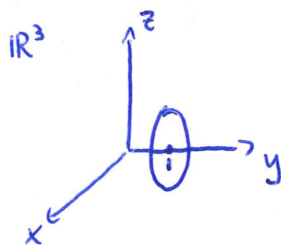
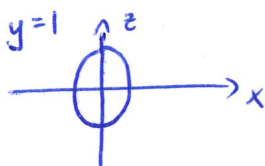
$$y=0: 0 - 2z^2 = 3x^2$$

$$0 = 3x^2 + 2z^2$$



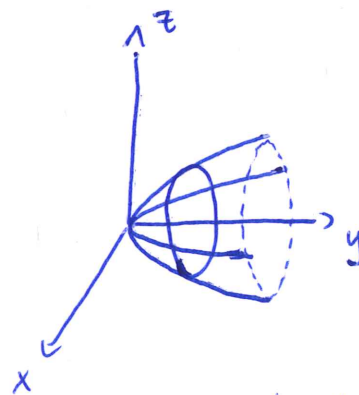
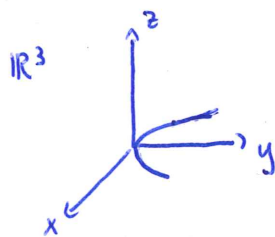
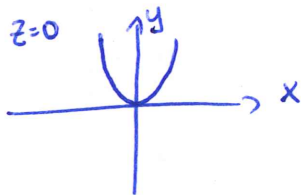
$$y=1: 1 - 2z^2 = 3x^2$$

$$1 = 3x^2 + 2z^2$$



$$z=0: y = 3x^2$$

parabola



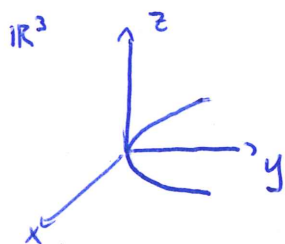
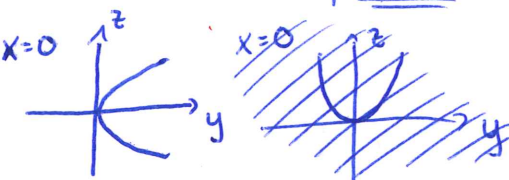
paraboloid

opens towards positive y.

$$x=0: y - 2z^2 = 0$$

$$y = 2z^2$$

parabola



CLUES

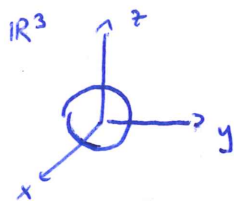
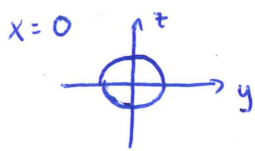
- we see parabolas + ellipses
- parabolas we get by fixing different variables all open in same direction
- variable
- $\pm (\text{variable}^2 + \text{variable}^2)$

all possible traces: point, ellipse, parabola, (no trace)

$$\underline{6x^2 = 3 - 2y^2 - 3z^2}$$

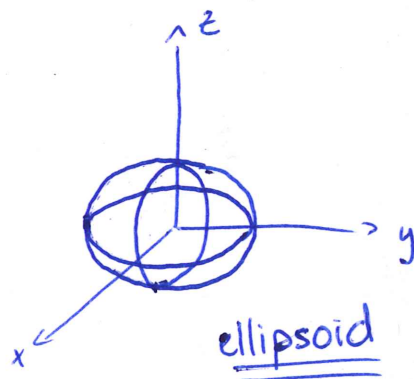
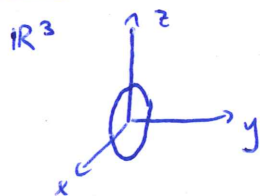
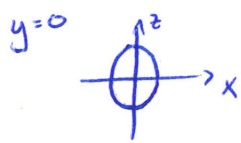
$$x=0: 0 = 3 - 2y^2 - 3z^2$$

$$2y^2 + 3z^2 = 3 \text{ ellipse}$$



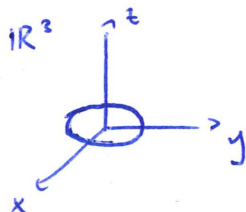
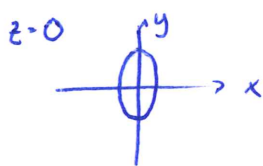
$$y=0: 6x^2 = 3 - 3z^2$$

$$3z^2 + 6x^2 = 3 \text{ ellipse}$$



$$z=0: 6x^2 = 3 - 2y^2$$

$$6x^2 + 2y^2 = 3 \text{ ellipse}$$



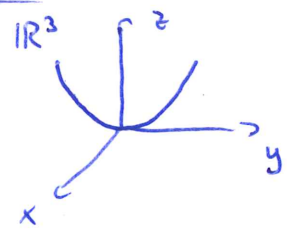
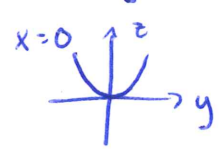
CLUES

- we see ellipses when we fix two different variables
- $\text{variable}^2 + \text{variable}^2 + \text{variable}^2 = \text{constant}$

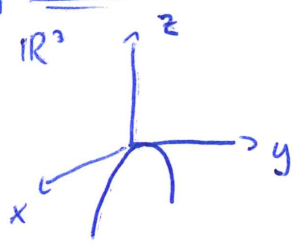
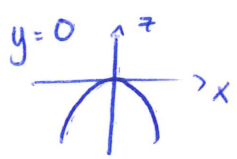
all possible traces: ellipse, point,
(no trace)

$$x^2 + z = 4y^2$$

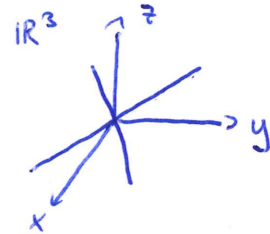
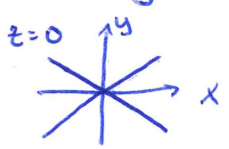
$x=0: z = 4y^2$ parabola



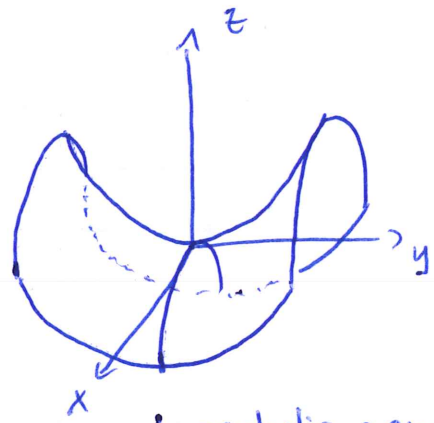
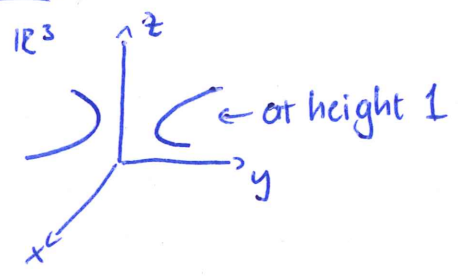
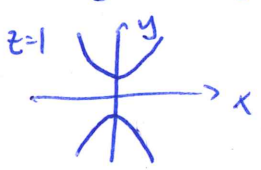
$y=0: x^2 + z = 0$
 $z = -x^2$ parabola



$z=0: x^2 = 4y^2$
 $x = \pm 2y$ lines



$z=1: x^2 + 1 = 4y^2$
 $1 = 4y^2 - x^2$ hyperbola



hyperbolic paraboloid

CLUES

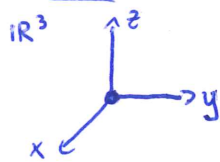
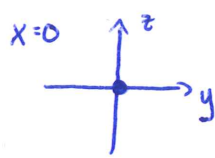
- we see parabolas opening in different directions
- we see parabolas plus lines or hyperbolas
- variable = variable² - variable²

all possible traces: parabola, hyperbola, lines

$$4x^2 - y^2 = 2z^2$$

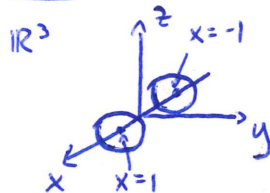
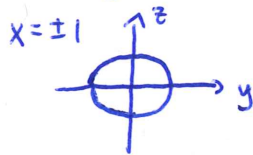
$$x=0: -y^2 = 2z^2$$

$$0 = y^2 + 2z^2 \quad \text{point}$$



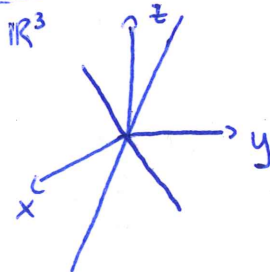
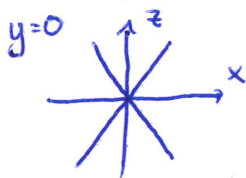
$$x=\pm 1: 4 - y^2 = 2z^2$$

$$4 = y^2 + 2z^2 \quad \text{ellipse}$$



$$y=0: 4x^2 = 2z^2$$

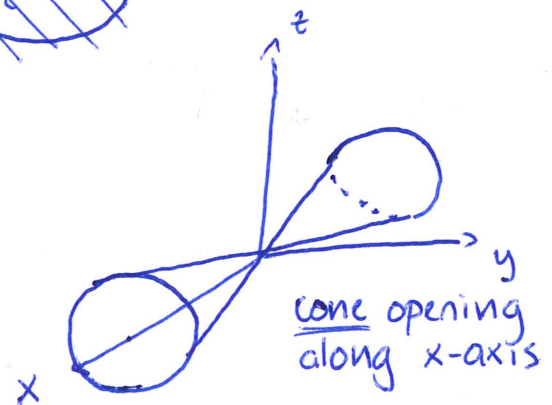
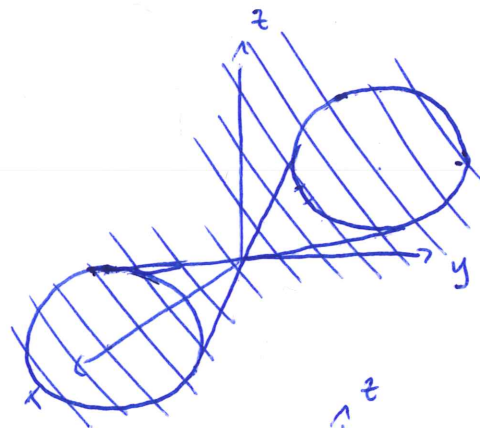
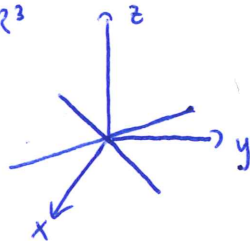
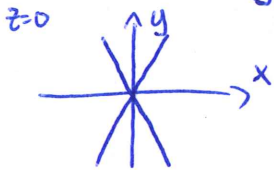
$$2x = \pm \sqrt{2}z \quad \text{lines}$$



$$z=0: 4x^2 - y^2 = 0$$

$$4x^2 = y^2$$

$$2x = \pm y \quad \text{lines}$$



CLUES

- we see ellipses plus lines or hyperbolas
- variable² = variable² + variable²
- we see lines when we fix two different variables

all possible traces: point, ellipse, lines, hyperbola