LESSON 4

MA 26100-FALL 2023

DR. HOOD

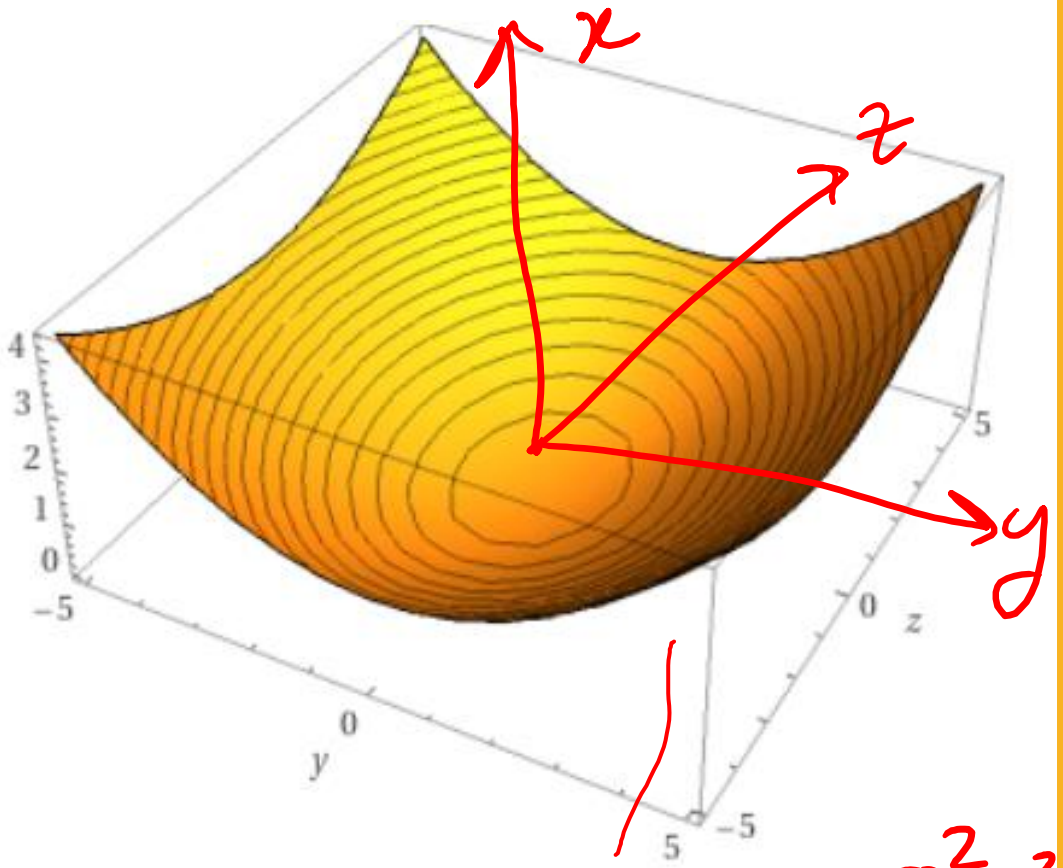
LESSON 4 - W

Consider the elliptic paraboloid

$$x = \frac{y^2}{9} + \frac{z^2}{16}$$

Which axis is it parallel to (or "p

a) x-axis
b) y-axis
c) z-axis



Traces:

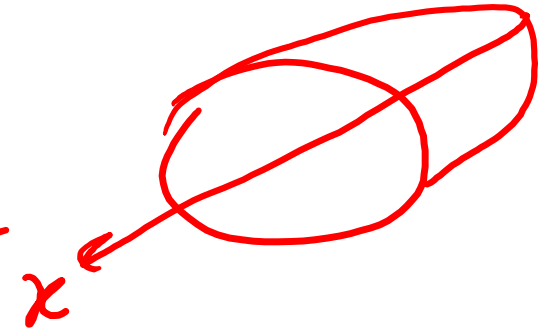
$x=1$ → $1 = \frac{y^2}{9} + \frac{z^2}{16}$ → Ellipse

$y=0$ → $x = \frac{z^2}{16}$ – parabola

$z=0$ → $x = \frac{y^2}{9}$ – parabola

$x=0$ → $0 = \frac{y^2}{9} + \frac{z^2}{16}$

(0,0,0)



TEST DRIVE

- Test drive what it is like to take an exam in ELLT hall
  - https://www.purdue.edu/asc/test-drive.html

Event Details

- **Event Date**: Wednesday, Sept. 6
- **Event Time**:
  - Check-in: 7-7:50 p.m.
  - Exam: 8-9 p.m.
  - Post-exam resource fair: ends at 9:30 p.m.
- **Location**: Elliott Hall of Music
- **Courses Offered:**
  - MA 165
  - MA 261
  - MGMT 200
  - ECON 251
  - PHYS 172

Register For Test Drive

VECTORS POLL

How do you feel about the material pertaining to vectors?

a) Totally comfortable; no problems at all and/or this has been entirely a review for me.
b) Quite comfortable.
c) Somewhat comfortable; I'm having trouble with some of the many different formulas and/or the intuition behind the ideas.
d) Uncomfortable; I'm extremely confused by this material.

POLL 1

(Spring 2020 Exam 1 #3) Identify the surface defined by the equation: $x^2 - y^2 + 2z - z^2 = 2$.

(Hint: Complete the square)

a) Elliptic Paraboloid
b) Hyperboloid of one sheet
c) Hyperboloid of two sheets
d) Ellipsoid

POLL 2

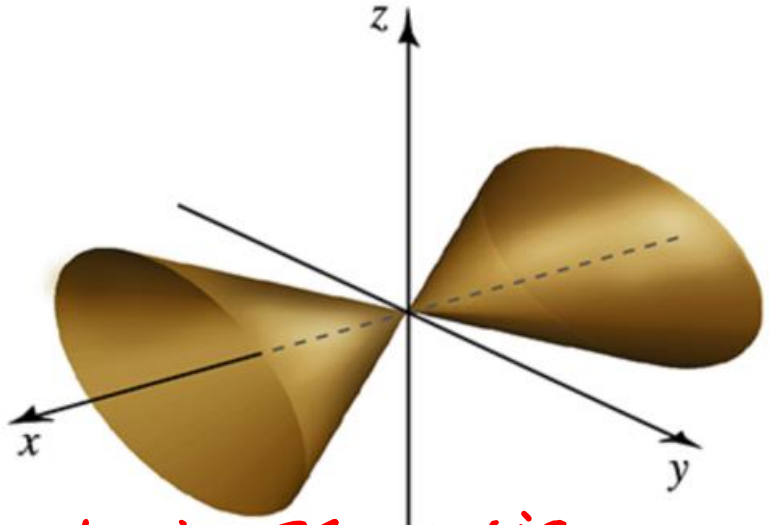
(Spring 2022 Exam 1 #3) Which of these equations has a graph like the pictured elliptic cone, with vertex at the origin and opening in the direction of the x-axis.

a) $y^2 - 4z^2 - 16x^2 = 1$

b) $y^2 + 4z^2 - 16x^2 = 1$

c) $y^2 - 4z^2 + 16x^2 = 0$

d) $y^2 + 4z^2 - 16x^2 = 0$



point in x axis
→ neg coeff in x

POLL 3

(Fall 16 Exam 1 #3) Which of the following produces a surface that is NOT shown here?

a) $y = x^2 - z^2$ hyperbolic paraboloid

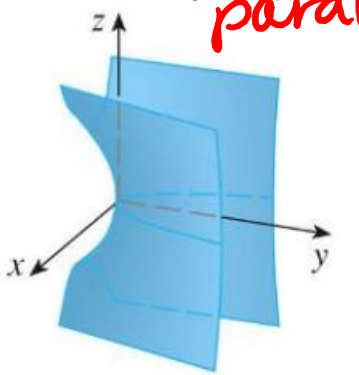
b) $y = 2x^2 + z^2$ paraboloid

c) $x^2 + 4y^2 + 9z^2 = 1$ Ellipse

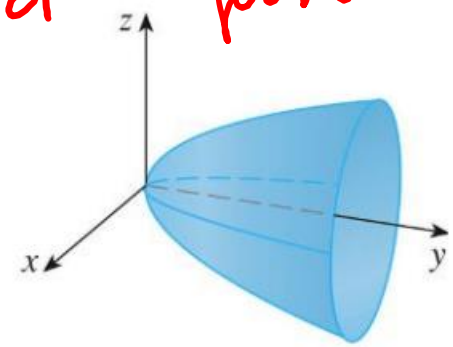
d) $x^2 + 2z^2 = 1$ cylinder

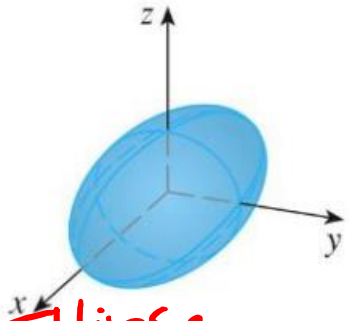
e) $-x^2 + y^2 - z^2 = 1$ Hyperboloid of two sheets

Hyperbolic paraboloid

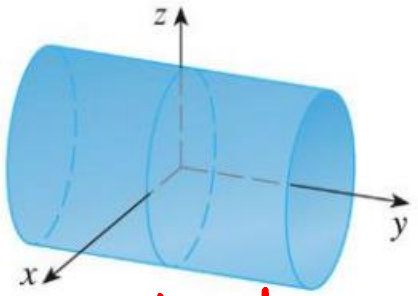


Elliptic paraboloid





Ellipse



cylinder

MUDDIEST POINT

What was the muddiest point from today's lecture?

a) Hyperboloid of one sheet
b) Hyperboloid of two sheets
c) Hyperbolic paraboloid
d) Elliptic Cone
e) None – understood everything today