nalysis II - Deggeller/Gleason/Tantod
Unit 3, Quiz 2 - 2019/20
[30 points]

I'm Lost in Space: Alan Lee
Per: D

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Awesome!

1. Matching: Math each quadric surface below to its corresponding name. [2 pts each]

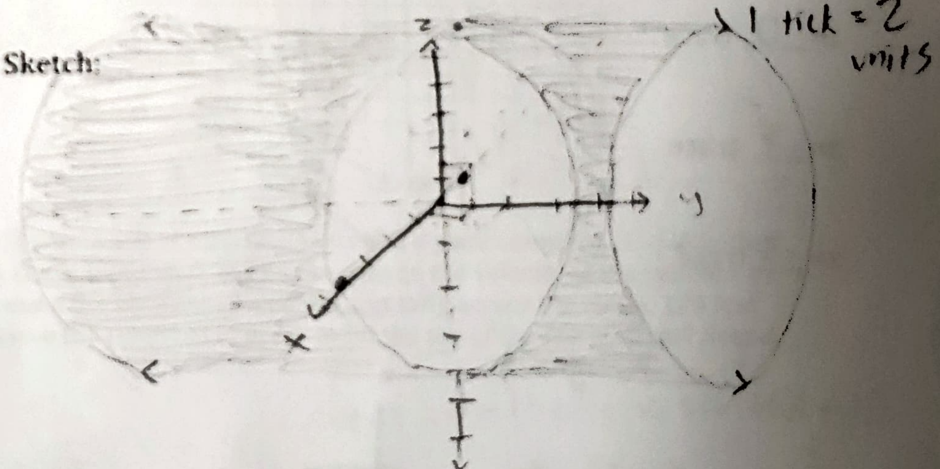
A: Plane B: Hyperboloid of 1 Sheet C: Hyperboloid of 2 Sheets D: Ellipsoid

E: Elliptic Cone F: Hyperbolic Paraboloid (saddle) G: Elliptic Paraboloid H: None of the Above

1. $x + y + z = 0$ A
2. $x^2 - y^2 = z^2 - 8$ B
3. $x^2 + y^2 + z^2 = 8$ D
4. $x - y^2 = z^2$ G
5. $x^2 - y^2 = z + 8$ F
6. $x^2 + y^2 = z^2$ E

2. Sketch a picture of, and write the equation for a circular cylinder with center: (1,2,3), and radius=10 that extends forever in the y direction. Note that this cylinder actually has infinite centers, so consider (1,2,3) just one of them. [5]

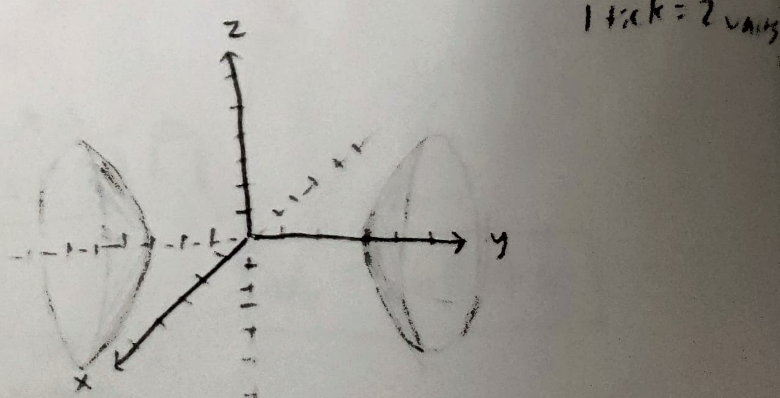
Sketch:



Equation: $(x-1)^2 + (z-3)^2 = 100$

3. Sketch a picture of, and name the following curve $x^2 + z^2 = y^2 - 36$ [5]

Sketch:



Name: hyperboloid of 2 sheets

$-x^2 + y^2 - z^2 = 36$

$x^2 - y^2 + z^2 = -36$

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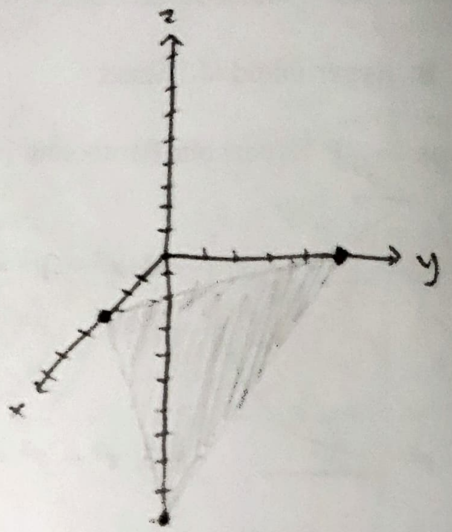
4. Sketch a picture of, and write an equation for a plane that has x-intercept: (3, 0, 0), y-intercept (0, 5, … and z-intercept (0,0 -10) [5]

Sketch:

1 tick = 1 unit

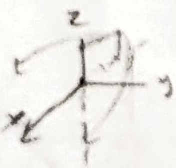


Equation: $10x+6y-3z=30$

5. The quadric surface $y^2 = x + z$ is surprisingly a parabolic cylinder. Use 3 different xy traces (3 different values for z) to explore what it might look like, and draw a sketch. Show all your work. You may do additional traces too if you'd like! [3]

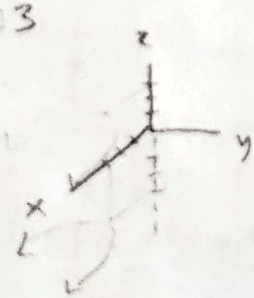
z= 0 trace $x=y^2$

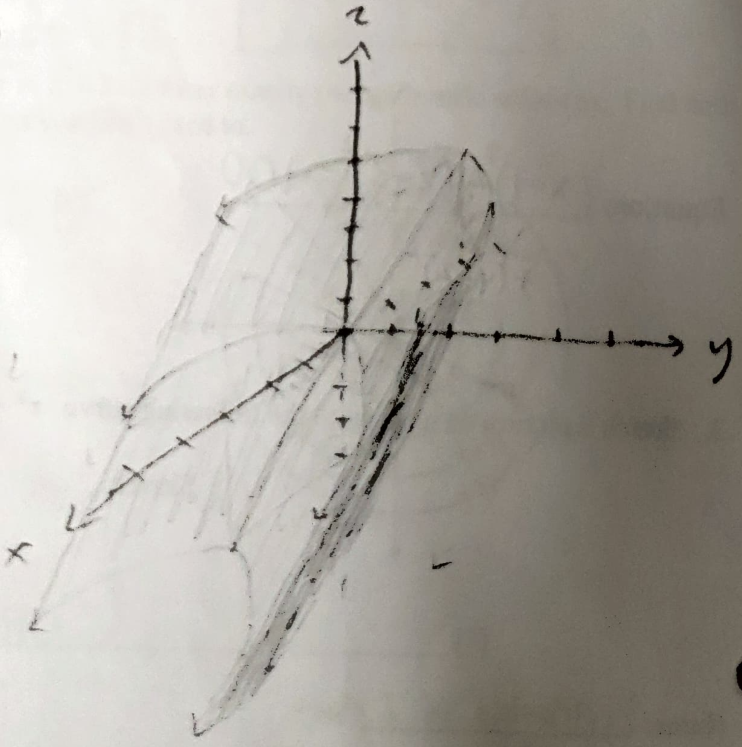
z= 3 trace $x=y^2+3$



z= -3 trace

$x=y^2+3$





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