**Ma 1024 Exam #2** (print neatly) **name**:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

no electronics of any kind, no notes, no books. Ruler OK. Extra paper OK

Show all steps leading to your results if you wish full credit.

1. Consider the surface **z = 196 - 4x2 - 4y2** above the x-y plane
2. **sketch** it
3. set up an integral that would provide the **volume** inside it (do not integrate it)
4. set up an integral that would provide it’s **surface area** (do not integrate)
5. set up an integral that would determine the total **flux** thru the surface of the vector field given by 

please clearly number the sections of your work **( a), b)** etc ) and note that there is a **second**, blank page to use as well.

1. Convert to polar and integrate: 
2. Consider first the upper half of **z2 = (x2 + y2)/3** and assume it is capped by the plane **z = 20.**

Please **set up** an integral in the coordinate system of your choice, which would, if integrated, give its **volume**. Do ***not*** actually integrate.

1. Discuss one ***application*** *o*f **the concept of flux thru a surface** . No computations needed.

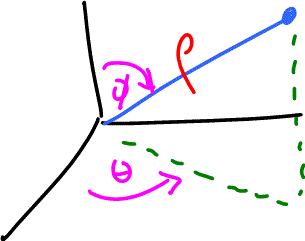
**bonus** ( 0.5 points possible) Discuss one interesting thing about cones that you learned in this course.

**Formulas and information of possible interest**

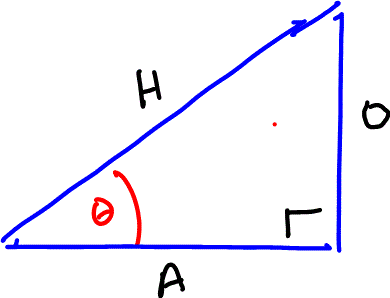
1. spherical coordinate info







1. cylindrical **dV = r dz dr dθ**
2.  (Pythagorean Theorem)
3. **SOH CAH TOA**



1. **Cross Product**



= < a2 b3 – a3 b2 , a3 b1 - a1 b3, a1 b2 - a2 b1 >