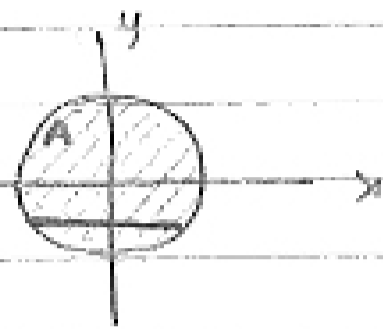


10/27/14

$$\iiint_V dV \quad x^2 + y^2 \leq 3 \quad 1 \leq z \leq 5$$



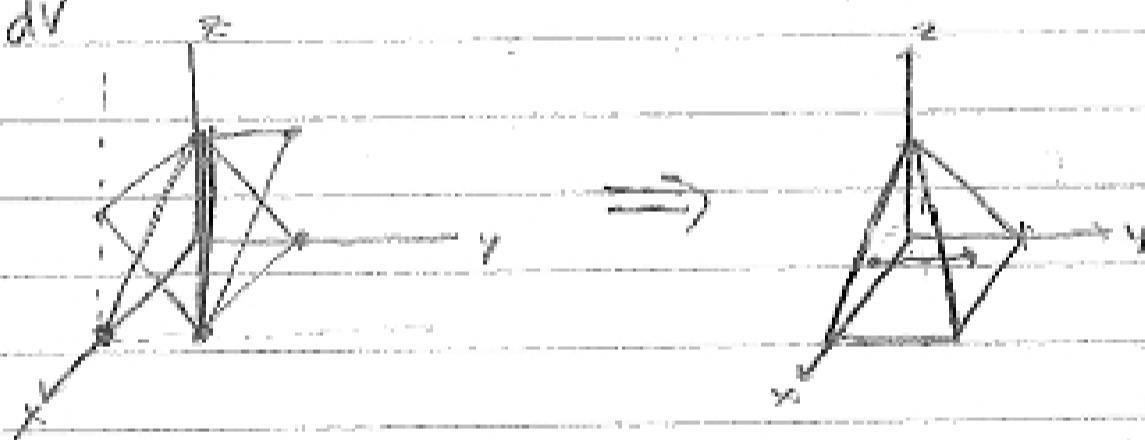
$$\iint_A \int_1^5 dz dA \quad x = \sqrt{3-y^2}$$

$$\int_{-\sqrt{3}}^{\sqrt{3}} \int_{-\sqrt{3-y^2}}^{\sqrt{3-y^2}} \int_1^5 dz dx dy$$

Pyramid

1<sup>st</sup> octant  $x+z \leq 1$   $y+z \leq 1$

$$\iiint_V dV$$



$$\iint_A \int_0^{1-z} dy dA$$

$$\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dy dz dx$$



Solid cut out from  $x^2 + y^2 = 4$  by planes

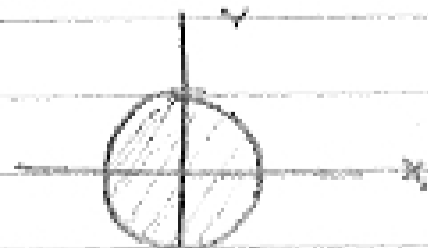
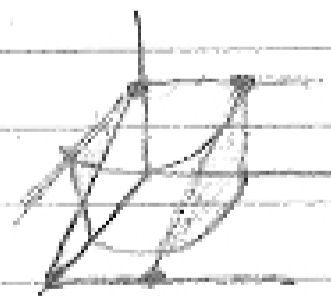
$y+z=3$  &  $z=0$

$$y = \pm \sqrt{4-x^2}$$

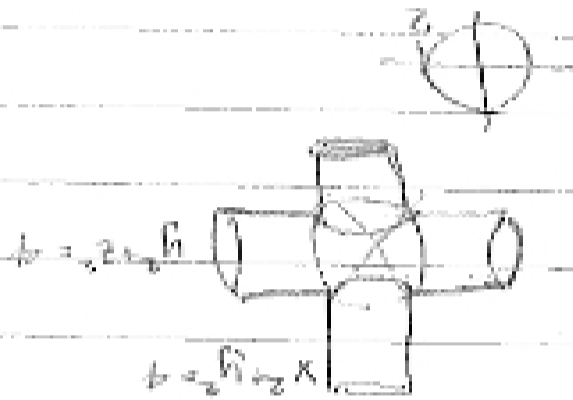
$$\iiint_V (x+2z) dV$$

$$\iint_A \int_0^3 (x+2z) dz dA$$

$$\int_{-2}^2 \int_{-\sqrt{4-x^2}}^{\sqrt{4-x^2}} \int_0^3 (x+2z) dz dy dx$$



Finish on your own



$$\int \int \int \frac{dy}{y} dz dx$$

Set bound by cylinders  
 $x^2 + y^2 = a$   
 $y^2 + z^2 = a$

$$\int_{-\frac{a}{\sqrt{2}}}^{\frac{a}{\sqrt{2}}} \int_{-\sqrt{a^2 - y^2}}^{\sqrt{a^2 - y^2}} \int_{-\sqrt{a^2 - y^2}}^{\sqrt{a^2 - y^2}} \frac{dy}{y} dz dx$$

$$z = \pm \sqrt{a^2 - y^2}$$

$$y = \pm \sqrt{a^2 - z^2}$$

$$y = \pm \sqrt{a^2 - z^2}$$

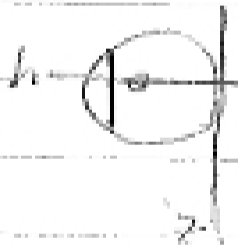
$$x = y$$

$$x = \pm \sqrt{a^2 - z^2}$$

$$y^2 - \frac{a^2}{2} + z^2 = 0$$

$$y^2 - \frac{a^2}{8} + \frac{z^2}{2} + z^2 = \frac{a^2}{8}$$

$$(y - \frac{a}{\sqrt{2}})^2 + 2z^2 = \frac{a^2}{2}$$



$$\int \int \int \frac{dy}{y} dz dx$$

$$\int \int \int \frac{dy}{y} dz dx$$

$$x \leq \sqrt{a^2 - z^2}$$

$$0 \leq x \leq y$$

