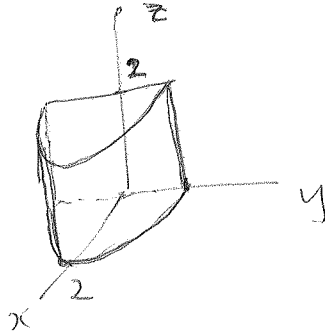
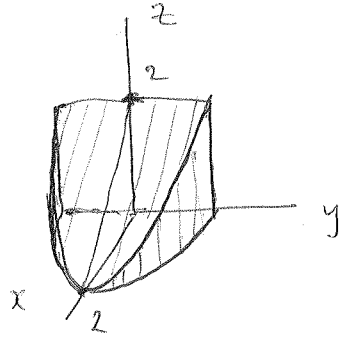


(a) Sketch the solid bounded by the graphs of the following equations:  
 $x = 0$ ,  $z = 0$ ,  $z = 2$ ,  $x = 2 - y^2$ .



(b) Sketch the solid bounded by the graphs of the following equations:  
 $x = 0$ ,  $z = 0$ ,  $z = 2 - x$ ,  $x = 2 - y^2$ .  
 (Hint: This solid is part of the solid in (a).)



(c) Suppose the density  $\delta(x, y, z) = e^{xyz}$ . Write down a triple integral for the mass of the solid defined in (b). Do not evaluate the integral.

$$\int_{-\sqrt{2}}^{\sqrt{2}} \int_0^{2-y^2} \int_0^{2-x} e^{xyz} dz dx dy$$

because  $0 = 2 - y^2$ .

(d) Let  $(\bar{x}, \bar{y}, \bar{z})$  be the center of mass of the solid in (c). Is  $\bar{y}$  positive, zero or negative?

$\bar{y}$  is positive because the solid is symmetric about the  $xz$  plane but the density,  $e^{xyz}$ , is bigger when  $y > 0$ .