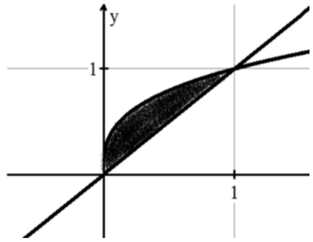
8.5 Area Between Curves (with respect to y)

CA #1

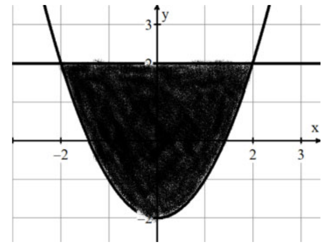
Calculus　　　　　　　　　　　　Name: ______________________________

For each region, set up an integral <u>with respect to y</u> that represents the area of the region. Do not solve.

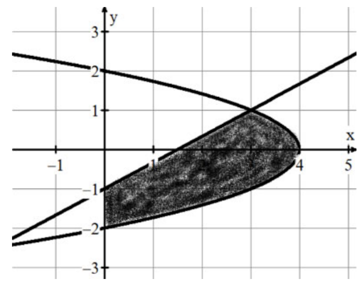
1. $y = \sqrt[3]{x},\ y = x$



2. $y = x^2 - 2$ and $y = 2$



3. $x = 4 - y^2,\ y = \frac{2}{3}x - 1, x = 0$



Set up the integral(s) that give the area of the region bounded by the given equations. Show the equivalent set up with respect to x as well as with respect to y.

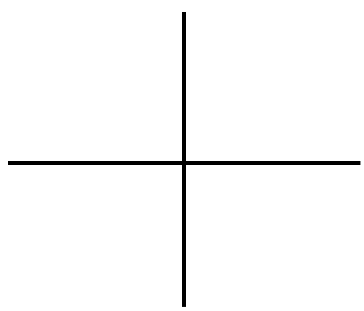
4. $y = x^3, y = x$

1st quadrant only!

with respect to x

<u>Sketch</u> a graph here in the middle!

with respect to y



Find the area of the region bounded by the following curves. Set up your integrals with respect to y. A calculator is allowed to evaluate the integral.

5. $y = 1 - x^2,\ y = \sqrt{x} - 1$ and $y = -\sqrt{x} - 1$.

Answers to 8.5 CA #1

1. $\int_0^1 (y - y^3)\,dy$	2. $\int_{-2}^{2} (2\sqrt{y+2})\,dy$	3. $\int_{-2}^{-1} (4 - y^2)\,dy + \int_{-1}^{1} \left(-y^2 - \frac{3}{2}y + \frac{5}{2}\right)dy$
4a. $\int_0^1 (x - x^3)\,dx$ 4b. $\int_0^1 (\sqrt[3]{y} - y)\,dy$		5. $\int_{-2.35321}^{0} [\sqrt{1-y} - (y+1)^2]\,dy = 2.2675$