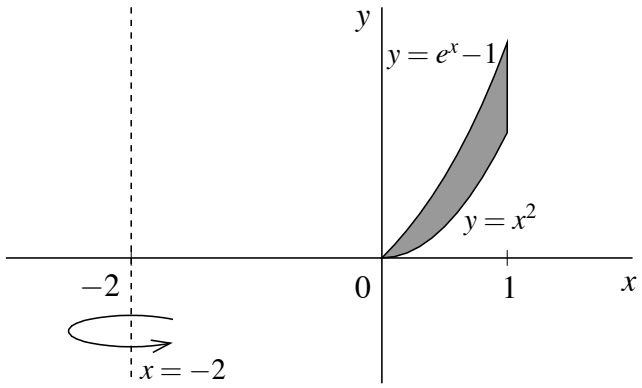
4. (10 total points) Let $\mathscr{R}$ be the region which is bounded on the left by the curve $x = \sqrt{y}$, bounded on the right by the line $y = -\frac{1}{2}x + 5$, and bounded below by the x-axis.

   (a) (5 points) Set up a definite integral (or integrals) *with respect to* x for the area of the region $\mathscr{R}$, and evaluate your integral(s). Give your answer in exact form.

   (b) (5 points) Set up a definite integral (or integrals) *with respect to* y for the area of the region $\mathscr{R}$, and evaluate your integral(s). Give your answer in exact form.

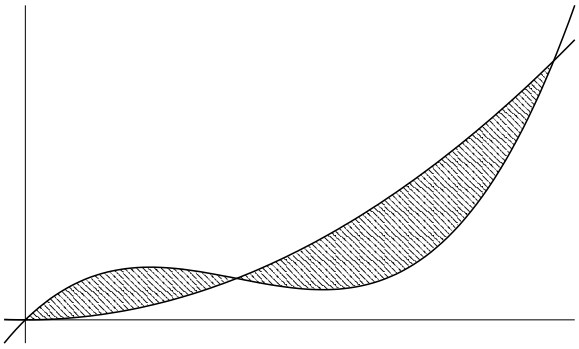
4. (8 total points) The region between $y = x^2$, $y = e^x - 1$, $x = 0$, and $x = 1$ is rotated about the vertical line $x = -2$ to form a solid.



(a) (4 points) Set up an integral for the volume of this solid using *CYLINDRICAL SHELLS*. *DO NOT EVALUATE THE INTEGRAL*.

(b) (4 points) Set up an integral (or integrals) for the volume of this solid using *WASHERS*. *DO NOT EVALUATE THE INTEGRAL(S)*.

4 (10 points) Compute the total area bounded by the curves $y = x^2$ and $y = x^3 - 6x^2 + 10x$.



5. (8 points) Consider the region bounded by the curve $y = 1/x$, the line $x = 1$, and the line $y = c$ for some constant $c > 1$. Rotate this region about the y-axis. For what value of c is the volume of the resulting solid equal to 2π?