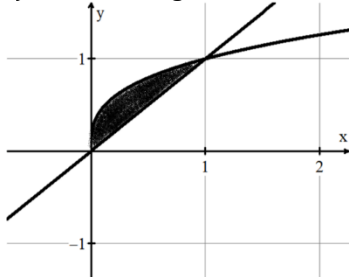| Find the area of the region bounded by the following graphs. Show your work. |
|---|

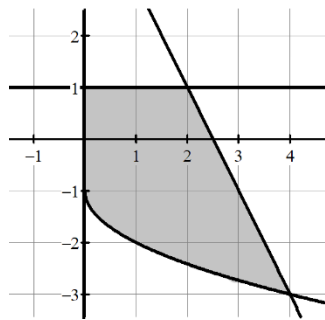1. $y = \sqrt[3]{x}, x = 0,$ and $y = 2$

2. $y = x^2$ and $y = 4x - x^2$

Set up an integral(s) that represents the shaded region. Do not solve. Use a calculator if necessary to help find the lower and upper bounds.
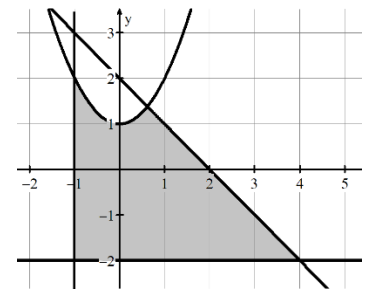
3. $f(x) = \sqrt[3]{x}, \ g(x) = x$

4. $y = -\sqrt{x} - 1, \ y = 1,$
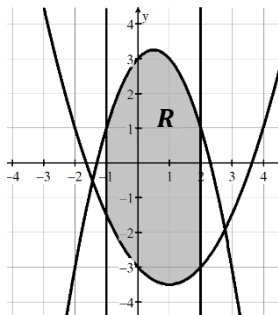$y = 5 - 2x,$ and $x = 0$

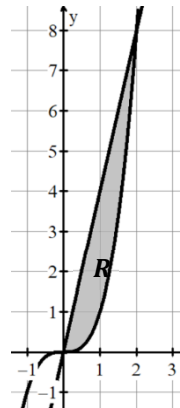5. $y = x^2 + 1, \ y = -2,$
$y = 2 - x,$ and $x = -1$

Let R be the region bounded by the given curves as shown in the figure. If the line $x = k$ divides R into two regions of equal area, find the value of k

7. $y = -x^2 + x + 3$, $y = \frac{1}{2}x^2 - x - 3$, $x = -1$, and $x = 2$

8. $y = x^3$ and $y = 4x$

1. $\int_0^8 \left(2 - \sqrt[3]{x}\right) dx = 4$	2. $\int_0^2 (4x - 2x^2)\, dx = \frac{8}{3}$	3. $\int_0^1 \left(\sqrt[3]{x} - x\right) dx$	4. $\int_0^2 \left(2 + \sqrt{x}\right) dx + \int_2^4 \left(6 - 2x + \sqrt{x}\right) dx$
5. $\int_{-1}^A (x^2 + 3)\, dx + \int_A^4 (4 - x)\, dx$ where $A = 0.618034$	6. $k \approx 1.445$		7. $k \approx 0.5846$