to use with video -
http://www.chaoticgolf.com/vodcasts/calc/lesson7_2/lesson7_2.html 5:20 - 16:35

Area of a Region Between Two Curves

If f and g are continuous on [a, b] and $g(x) \le f(x)$ for all x in [a, b], then the area of the region bounded by the graphs of f and g and the vertical lines $x = a$ and $x = b$ is

$$A = \int_a^b [f(x) - g(x)]\,dx$$

Example 5: Find the area of the region bounded by the graphs of $y = x^2 + 2$, $y = -x$, $x = 0$, and $x = 1$.

Step 1: Draw a picture and shade the desired region.

Step 2: Draw an arbitrary rectangular strip.

Step 3: Using the area of the rectangular strip as a guide, set up and solve an integral to find the area between the curves.

Example 6: Find the area of the region bounded by the graphs of $x = 3 - y^2$ and $x = y + 1$.