

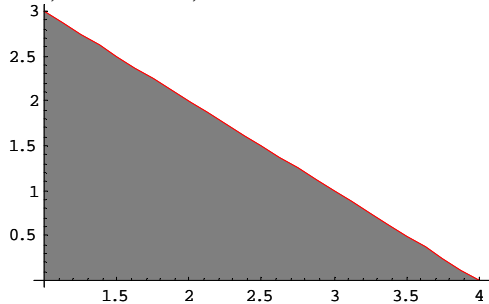
January 31

Answer Questions Section 6.4

Problem #27

$$\int_1^4 (4-x) dx$$

If $f(x) = 4 - x$, then $f(x) > 0$ if $1 < x < 4$. I am looking for the area of the region bounded by the curves $f(x) = 4 - x$, the x -axis, and the lines $x = 1$ and $x = 4$. So we are looking for the area of this region.



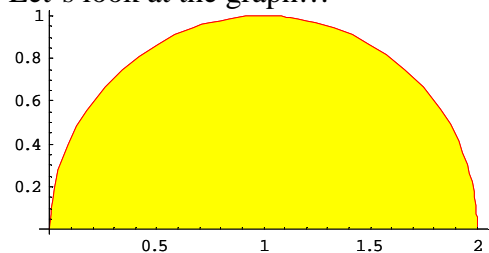
So we are looking for the area of the triangle with base of 3 units and the height is also 3 units. Then the area is $9/2$ square units.

$$\int_1^4 (4-x) dx = \frac{9}{2}$$

Problem #31

$$\int_0^2 \sqrt{1-(x-1)^2} dx$$

Let's look at the graph...



We have the top half of a circle with radius 1.

$$\int_0^2 \sqrt{1-(x-1)^2} dx = \frac{1}{2} \pi(1)^2 = \frac{\pi}{2}$$