1. Last time we talked about approximating the area under a curve using sums of rectangles. Is there a way to use this idea to find the actual area under a curve (and not just an approximation)?

2. Let us consider a function $f(x)$ on an interval $[a, b]$. **By definition**, the integral of f from a to b, denoted by

$$\int_a^b f(x)dx$$

is ...

3. Compute the following integrals. Drawing the graphs of these functions will probably help you.

   a) $\displaystyle\int_{-3}^{3} \sqrt{9 - x^2}\, dx$

   b) $\displaystyle\int_{-2}^{2} (2 - |x|)\, dx$

4. Let us now look at one important property of integrals.

   a) Compute the integral $\int_{-3}^{3} -\sqrt{9-x^2}\,dx$. What do you conclude from this example?

   b) Then, what is $\int_{-1}^{1} x\,dx$

5. Let us see one more property of integrals.

   a) Compute the integrals $\int_{-3}^{0} \sqrt{9-x^2}\,dx$ and $\int_{0}^{3} \sqrt{9-x^2}\,dx$.

   b) How are they related to $\int_{-3}^{3} \sqrt{9-x^2}\,dx$? What property of integrals is this an example of?

   c) Compute $\int_{0}^{0} \sqrt{9-x^2}\,dx$.