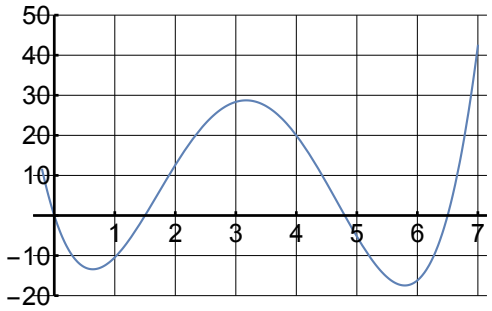
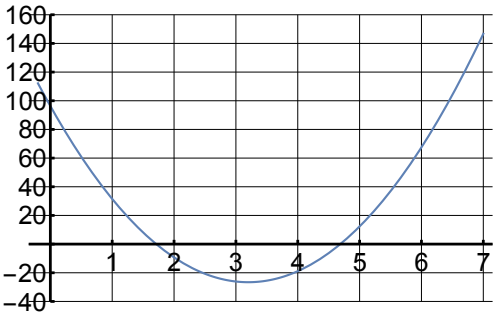
These are only a *few* sample problems to *help* you prepare for the exam. You should also be certain that you completely understand the WeBWorK assignments, Problems Sets, in-class work, and your class notes.

1. You will certainly want to review all of the antidifferentiation problems from the homework and in-class work.

2. The graphs of f'' and $f^{(4)}$ are shown below.



Plot of $y = f''(x)$



Plot of $y = f^{(4)}(x)$

   (a) Let $I = \int_2^6 f(x)\,dx$. Compute an upper bound on the error $|I - T_{42}|$.

   (b) Let $I = \int_2^5 f(x)\,dx$. Find a value of n such that $|I - S_n| \le 0.005$.

   (c) Let $I = \int_5^6 f(x)\,dx$. Will T_n overestimate or underestimate I? Explain.

3. Let R be the region bounded by the graphs $y = \sqrt{8x}$ and $y = x^2$. Find the volume of the solid formed when R is rotated about

   (a) The x-axis

   (b) The horizontal line $y = 5$

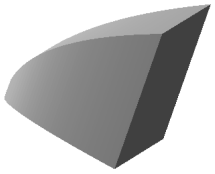
4. Set up the integral for each of the following. *You do not need to evaluate these integrals.*

   (a) The volume of the solid formed with the region R from #3 is rotated about the line $x = 6$

   (b) The length of the curve $y = x\sin(x) + 8$ from $x = 0$ to $x = \pi$

   (c) The area of the surface formed when the curve from (b) is rotated about the x-axis

5. The base of a certain solid is the region in the xy-plane bounded to the left by the parabola $x = 9y^2$ and to the right by the line $x = 18$. The cross sections perpendicular to the x axis are squares. Find the volume of the solid.



6. Let $I = \int_0^{2\pi} \sqrt{1 + \cos(x)^2}\,dx$.

   (a) Interpret I as the area of a certain region R. What is R?

   (b) Interpret I as the length of a curve C. What is C?

   (c) Interpret I as the volume formed when the graph of a function $y = f(x)$ is rotated about the x-axis. What is $f(x)$?

   (d) Draw rough sketches to support your answers.