Math 131 Homework: Day 12

My Office Hours: M & W 12:30–2:00, Tu 2:30–4:00, & F 1:15-2:30 or by appointment. **Math Intern** Sun: 12–6pm; M 3-10pm; Tu 2–6, 7–1pm; W and Th: 5-10 pm in Lansing 310. Website: `http://math.hws.edu/~mitchell/Math131S13/index.html`.

Practice

1. Review for the exam. See the Day 11 handout for a complete list of topics covered on the exam. It will include material from today's class on area between curves. Remember the **Practice Problems** on line.

2. **a)** Read/Review Section 6.2 on Area Between Curves. Look ahead and skim the first few pages of Section 6.3 on Volume, a cool application of integration.

b) Practice page 388 #5, 7(what is the antiderivative of 2^x?), 9, 11

c) Try the problems at the bottom of this sheet.

3. Given a quantity Q with a known rate of change Q'. Net change $= Q(b) - Q(a) = \int Q'(t)\,dt$ and

Future value $= Q(t) = Q(0) + \int_0^t Q'(x)\,dx$

a) Example: The population of an endangered species changes at the rate $P(t) = 300 - 2t$ indiv/yr. If $P(0) = 300$, determine: The population after 5 years.

b) The net change in the population from year 1 to year 4.

c) Determine when the population becomes extinct.

Homework for Wednesday

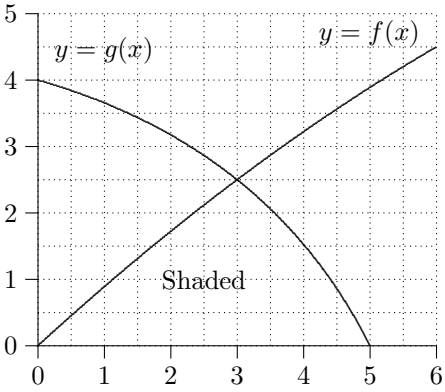
Complete WeBWorK Day 11 (due Tuesday) and do WeBWorK Day 12 (due Wednesday night) as part of your review.

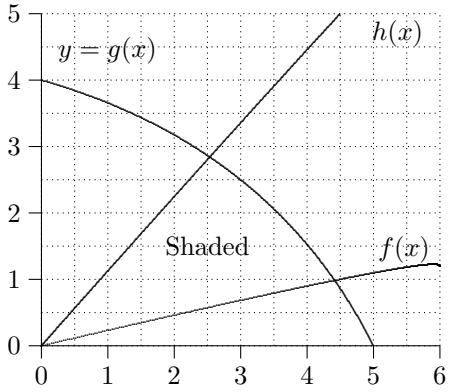
1. Page 388 #12, 17(In the first quadrant. Check your answer in the back), 20, and 22 (Hint: $y = 12 - 4x = 4(3 - x)$.)

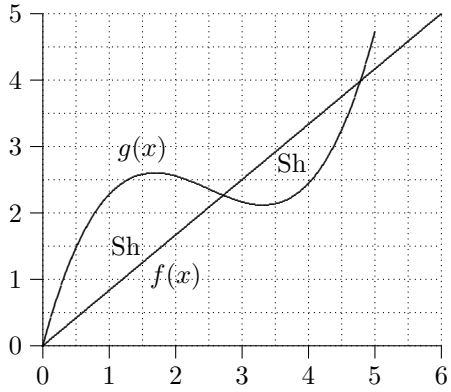
More Practice

The following questions also appear in the Practice Review on line, where the answers are available.

1. Set up the integrals using the functions $f(x)$, $g(x)$, and $h(x)$ and their points of intersection that would be used to find the shaded areas in the three regions below.







2. Sketch the regions for each of the following problems before finding the areas.

a) Find the area enclosed by the curves $y = x^3$ and $y = x^2$. (Answer: 1/12)

b) Find the area enclosed by the curves $y = x^3 + x$ and $y = 3x^2 - x$. (Answer: 1/2)

c) Find the area between the curves $f(x) = \cos x + \sin x$ and $g(x) = \cos x - \sin x$ over $[0, 2\pi]$. (Answer: 8)