Announcements

- This week: Final Exam Review
- Course evaluations are still open, but closs tonight at midnight.
  - ▸ 125A: https://uw.iasystem.org/survey/165334 (75% completed!!)
  - ▸ 125B: https://uw.iasystem.org/survey/165324 (88% completed!!)
- Final Exam: Saturday, December 10 from 1:30 – 4:20 pm (Bring UW ID)
  - ▸ Go to the correct Room: <u>125 A in KNE 110</u> and <u>125 B in KNE 210</u>
  - ▸ Bring your student ID
  - ▸ Cumulative Exam: Covers all material
  - ▸ Show all your work!
  - ▸ The only calculator allowed is the Ti-30x IIS.
  - ▸ Allowed one 8.5×11 sheet of notes (both sides)
  - ▸ May use the 20 integrals on p. 495 without deriving them. Show your work in evaluating any other integrals, even if on your note sheet.
- Math Study Center is open until 9:30 PM tonight.

Today

- Final Exam Review - Requested problems Continued

Winter 2005, Problem 5. Let b be a positive number, and consider the region bounded by the curves

$$y = x^2, \qquad y = x^2 + 1, \qquad x = -b, \qquad \text{and} \qquad x = b.$$

1. Find the y-coordinate of the center of mass of this region, in terms of b.

2. Because of the symmetry of this region, the x-coordinate of the center of mass is 0. For small values of b, say $b < M$, the center of mass is in the region, while for $b > M$, the center of mass is outside of the region. Find M.

Winter 2016, Problem 3 (highly requested problem).

Consider the region in the xy-plane formed by a rectangle of height 4 and width 3 and a half-disk of radius 2 centered at $(3, 0)$, as shown in the figure. Compute x, the x-component of the centroid of the region.

Winter 2013, Problem 6. Two laborers dig a hole in the ground 10 feet deep, shoveling the dirt up to the top of the hole. The horizontal cross-section of the hole is a rectangle of length 8 feet and width 3 feet. The dirt weighs 100 pounds per cubic foot.

1. What is the total work (in ft-lb) done by the two laborers? (The dirt removed from the hole is cleared away by other laborers.)

2. the first laborer digs the hole part of the way, and then the second laborer finishes digging the hole. How deep (in ft) should the first laborer dig in order to do half of the total work? Give your answer in decimal form with at least three digits after the decimal point.

Winter 2015, Problem 3 (another highly requested problem).
Consider the improper integral

$$\int_0^\infty x \, e^{px} \, dx,$$

where p is a constant.

(a) Find the values of p for which the improper integral converges.

(b) Evaluate the integral for those values of p.