Part I (due at the beginning of class Friday, January 26)

Finish reading the blue Arc Length handout up to Example 2 and answer the question(s) therein as your reading questions.

Remember that what you turn in for Part I should have 3 parts, as mentioned in the syllabus:

(a) Your responses to the reading/watching questions below.

(b) Your own questions/comments on the reading.

(c) The amount of time you spent on Part I (including the time spent reading/watching).

Part II: Exercises (prepare for class Friday, January 26)

Examples 2, 3 and 4 on the blue Arc Length handout.

Part III: Homework Problems (due Wednesday, January 31 at the beginning of class)

Review the guidelines and Sample Homework in the syllabus to make sure your Part III solutions follow them.

1. Solids of Revolution JEOPARDY: For each part, the given integral represents the volume of a solid (it's the answer). What's the question that leads to this answer? In other words, write a question in the form of "find the volume of the solid obtained by rotating the region bounded by _____ around the _____ using the _____ method." Fill in each blank and explain how you know those are the things that belong in the blanks.

   (a) $\displaystyle\int_0^{\frac{\pi}{2}} \pi \sin^2 x \, dx$

   (b) $\displaystyle\int_0^3 2\pi x(3x - x^2) \, dx$

   (c) $\displaystyle\int_0^1 \left(\pi(2-x)^2 - \pi(2-(-x^2))^2\right) \, dx$

   (d)

   (e) $\displaystyle\int_2^4 \pi y^4 \, dy$

Bonus: Suppose a woodworker is making a solid that can be modeled by revolving the region bounded by $y = \frac{1}{2}x^2$ and $y = 2$ around the y-axis. The woodworker then drills a hole through the resulting solid centered along the y-axis so that the resulting solid has $\frac{3}{4}$ the volume of the solid before the hole is drilled. What is the radius of the hole?

mini-Celebration of Learning Friday

There will be a problem for Learning Target G2 (volumes of solids).