Lecture time: 1 pm **Quiz 2**

Fall 2013 **Your name:** _____

Math 0230 **Your TA's name:** _____

No calculators, no notes, no books. Show all your work (no work = no credit). Write neatly. Simplify your answers.

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1. [5 points] Use the method of washers to find the volume of the solid obtained by rotating the region bounded by the curves $y = \sqrt{x}$ and $y = x^2$ about the line $y = 2$.

2. [5 points] Find the exact length L of the curve $y = \dfrac{x^2}{4} - \dfrac{\ln x}{2}$ when $1 \leq x \leq 2$.

Hint: $(x^2-1)^2 = x^4 - 2x^2 + 1$, $x^4 + 2x^2 + 1 = (x^2+1)^2$.

Show that the integrand is $\dfrac{1}{2}x + \dfrac{1}{2}x^{-1}$ and evaluate the corresponding integral.

bonus problem [5 points extra] Evaluate the integral $I = \int_4^\infty \frac{x^{2/3}}{x^{3/2} - 2}\, dx$ if it is convergent.