Math 20B
Midterm Exam 1
January 31, 2012
. . .

Version A

Instructions

1. **No calculators or other electronic devices are allowed during this exam.**
2. **You may use one page of notes, but no books or other assistance during this exam.**
3. **Write your *Name*, *PID*, and *Section* on the front of your Blue Book.**
4. **Write the *Version* of your exam on the front of your Blue Book.**
5. **Write your solutions clearly in your Blue Book**
   (a) **Carefully indicate the number and letter of each question and question part.**
   (b) **Present your answers in the same order they appear in the exam.**
   (c) **Start each question on a new page.**
6. **Read each question carefully, and answer each question completely.**
7. **Show all of your work; no credit will be given for unsupported answers.**

0. (1 point) Carefully read and complete the instructions at the top of this exam sheet.

1. (3 points) Compute the following derivative, where b is a constant: $\dfrac{d}{dx}\displaystyle\int_{2012}^{x} \frac{dt}{\sqrt{t+20b}}$.

2. (4 points) Evaluate $\displaystyle\int x\sqrt{x+2}\,dx$.

3. (4 points) Evaluate $\displaystyle\int \sqrt[3]{x}\,\ln(x)\,dx$.

4. (6 points) A particle initially at the origin moves along the x-axis with velocity $v(t) = (2-t)\sqrt{t}$.
   (a) Find the particle's position at time $t = 4$.
   (b) What is the *total distance* traveled by the particle during the time interval from $t = 0$ to $t = 4$? (Be careful!)

5. (6 points) Find the volume of the solid obtained by revolving the region bounded by $y = 2x - 2$, $y = -3x + 8$, and the x-axis about the y-axis.