TEST PREP on 5.1, 5.2, and 5.3 - Dr. Loveless

Format and Goals:

1. Work on Problem 1 below on your own for 3–5 minutes. Pretend this is a real exam.
2. Then compare your work and discuss with classmates. Your TA will circulate and check your progress.
3. Make sure your TA records your attendance and places a check on your paper for your records.
4. If you write on the board, answer a challenging question, or catch a mistake, let your TA know your name so they can record a participation bonus (one bonus per class; what the bonus means will be defined later).

Spring 2017 - Exam 1 - Problem 1(a) - Dr. Loveless:

1(a) Evaluate $\displaystyle\int \frac{4}{\sqrt{x}} + x^4\left(\frac{3}{4x^5} - \frac{x^2}{2}\right) + \sec^2(5x)\, dx$

If you finish early, try some of the problems on the next page (these are all taken directly from old exams). Once everyone has finished Problem 1, decide as a class which homework questions to discuss. If the class is discussing a homework question you've already completed, use that time to work on the additional old exam problems.

Winter 2019 - Exam 1 - Problem 4(a) - Dr. Loveless: *Constants of Integration*

4(a) Find $f(x)$, if $f''(x) = 28\sqrt[3]{x} - 6x$, $f(0) = 5$ and $f(1) = 10$. Put a box around your answer.

Winter 2017 - Exam 1 - Problem 2(b) - Dr. Loveless: *Riemann Sum concept*
Part (b) of this questions relates to the section 5.3 (fundamental theorem of calculus part 1), so just do part (a) for now. Part (b) will be fast and easy after section 5.3, so come back to this after that.

1. A table of values for an increasing function f are given:

x	3	3.5	4	4.5	5	5.5	6
$f(x)$	1	3	6	9	12	15	20

   (a) Approximate the value of $\int_3^5 f(x)\,dx$ using left-endpoints with $n = 4$ subdivisions.

   (b) Let $g(x) = \int_3^{x^2+x} f(t)\,dt$. Find the value of the *derivative* of $g(x)$ at $x = 2$.
   That is, compute $g'(2)$.

Winter 2019 - Exam 1 - Problem 3(a) - Dr. Loveless: *Riemann Sum notation*

3 Leave your answers in exact form, but **simplify your final answers**.

   (a) Consider $\lim_{n\to\infty} \sum_{i=1}^{n} \left(1 + \frac{3i}{n}\right)^2 \cdot \frac{3}{n}$. Rewrite this as an integral and evaluate the integral.