MATH 1B WEEK 1

General Information

My name:	James Hagborg
My email:	jhagborg@math.berkeley.edu
My website:	https://math.berkeley.edu/~jhagborg/1B
My office hours:	MWF 12:10–1:00 in 842 Evans (the middle of the 8th floor)

Schedule

Each section will typically follow the same schedule:

(1) Brief review of previous lecture
(2) Start working on a worksheet individually
(3) Move to working in groups
(4) Review answers as a class
(5) Quiz

During group work, I encourage you to talk with eachother and collaborate. You should not just be working in silence and checking your answers at the end. I will be milling around the room to check in and answer questions. We likely will not have time to review every single question, but I will post solutions online.

Homework

There will be weekly homework assignments, making up 10% of your grade. Each assignment will be graded on a scale of 1–5 for completion. However, you should still put the effort in to ensure your solutions are correct, since the quiz questions are likely to be very similar to the homework.

For the sake of saving paper and staying organized, I will be collecting submissions via gradescope. Submissions will be due at 6:30 PM on Thursdays. I recommend you scan your work using the free scanners available at any of the libraries on campus. If you have any difficulty turning in homework, please email it (before the deadline!) or bring it to section.

Note that the gradescope page for homework and quizzes is specific to my sections, and is different from the one that will be set up for exams. It is marked "(HW and quizzes only)." You should have recieved an email inviting you to the course already. If not, let me know.

Quizzes

There will be weekly quizzes at the end of section, making up 10% of your grade. Quizzes will be very similar to the homework due that week. I will only allow make-ups in extremely exceptional cases, but in return you can drop the two lowest scores.

If you need to miss a section

There is no need to email me, but you are welcome to if you have questions. On the day of that section, look online for the worksheet that week. You will use one of your two drops for that day. If you have some exceptional circumstance that requires you to miss several sections, talk to me after class or via email.

Compute the following

Exercise 1. $\frac{d}{dx}(x^2 + \sin(2x))$

Exercise 2. $\frac{d}{dx}(\ln(2x)\tan(2^x))$

Exercise 3. $\frac{d}{dx}\sec\left(e^{x^x}\right)$

Exercise 4. $\lim_{x\to\infty} \frac{3x^2 + x - 1}{3x - 1}$

Exercise 5. $\lim_{x \to 0} x^x$

Exercise 6. $\int \frac{2x}{x^2+1} dx$

Exercise 7. $\int x\sqrt{5x+10} dx$

Exercise 8. $\int_e^{e^2} \frac{1}{x \ln x} dx$

Exercise 9. $\int xe^{2x} dx$. (Hint: let $u = x$ and $dv = e^{2x} dx$)

Exercise 10. $\int \ln \sqrt{x} dx$

Exercise 11. $\int (x^3 + 2x + 4) \sin x \, dx$

Exercise 12. Describe a strategy for computing $\int P(x)e^x \, dx$, where $P(x)$ is any polynomial. Does a similar strategy work if e^x is replaced by $\sin x$ or $\cos x$? [By a strategy I mean something mechanical enough that you could describe it to your programmer friend (who hasn't taken 1B yet) and she could code it.]