

**Math 266B****Guide for Test 1**

Here are some sample questions from old tests. Some topics that we covered are not represented by these questions, but are still fair game.

1. (a)  $\int e^x dx =$
- (b)  $\int_0^2 x^3 dx =$
- (c)  $\int x^{-3} dx =$
- (d)  $\int 3x^{-1} dx =$
- (e)  $\int_1^3 \sin(3) dx =$
- (f)  $\int_0^\pi \sin(x) dx =$
- (g)  $\int_5^5 \arctan(x) dx =$
- (h)  $\int \frac{x^2 - 3}{x} dx =$
- (i)  $\frac{d}{dx} \int_9^x \frac{\tan(t)}{\sqrt{t}} dt =$
- (j)  $\frac{d}{dx} \int_4^2 \frac{\sqrt{t+1}}{\ln t} dt =$

2. (a)  $\int_2^3 x \sin(5x) dx =$
- (b)  $\int_3^4 7xe^{x^2} dx =$
- (c)  $\int 7x^2 e^x dx =$
- (d)  $\int x^2 \sqrt{x-2} dx =$

3. (a) Based on the definition of the definite integral, approximate

$$\int_1^3 \sin((x+2)^3) dx$$

using  $n = 4$  rectangles.

4. Compute the area of the region enclosed by the curves  $y = (x-1)^2$  and  $y = x+1$ .