HW 0

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Exercise 2

I already use Latex so it was easy :).

Exercise 3

The following integral converges:

$$\int_{x=\varepsilon}^{\infty} \frac{1}{x^2} dx = \frac{1}{\varepsilon}.$$

This looks how I expected.
The following integral diverges:

$$\int_{1}^{\infty} \frac{1}{x} dx.$$

I have some weird indents in my pdf. I'm not sure why that is.

Exercise 4

One of the most unexpected things about effective mathematical communication is the notion of writing math in **complete sentences**. I've also always viewed mathematical shorthand as sophisticated (albeit extremely unreadable), but this guideline really vindicates my prior feelings about it. I can finally just write my thoughts without feeling like I have to finaggle them into some arbitrary symbols, instead of just writing them in natural language. Other than that, I think this will be a fun course!

Exercise from class

Proof. Since a is odd, we can write a as $a = 2m + 1$ for some integer m. Likewise, we can write $b = 2k + 1$ for some integer k.
Therefore,

$$a + b = 2m + 1 + 2k + 1 = 2(m + k + 1),$$

where $m + k + 1$ is an integer, since adding integers results in an integer. Thus $a + b$ is even.

□