Day 2 Notes: Simple mathematical statements

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1 Introduction

For now, let's just practice typing.

1.1 Simple math

Suppose we are interested in addition. We might be interested in evaluating $2+2$. From prior experience, I am aware that

$$2+2=4.$$

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1.2 Less simple math

In calculus, we begin by studying limits. We might write something such as $\lim_{x\to 5} x^2$. From our studies of calculus, we know that

$$\lim_{x\to 5} x^2 = 25.$$

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We also use the limit to develop the derivative. In particular, for the function $f(x)$, we say that,

$$f'(x) = \frac{df}{dx} = \lim_{h\to 0} \frac{f(x+h)-f(x)}{h}.$$

Finally in our tour of calculus, we must mention the integral. We learn about both the indefinite integral and the definite integral. Let's first calculate a simple indefinite integral, such as $\int x^2 dx$. To me, the spacing is off, I prefer

$$\int x^{10}\, dx.$$

Evaluating this, we find

$$\int x^{10}\, dx = \frac{1}{11}x^{11} + c.$$