Day #3: More math!

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Previously we discussed the integral. We continue that discussion today. Consider the indefinite integral $\int x\,dx$. Consider the indefinite integral $\int x\,dx$. Consider the indefinite integral

$$\int x\,dx.$$

Suppose we needed to calculate the definite integral of some function. Consider the example below,

$$\int_{-1}^{1} x^2\,dx = \left(\frac{x^3}{3}\right)\Bigg|_{-1}^{1} \tag{1}$$

$$= \frac{(1)^3}{3} - \frac{(-1)^3}{3} \tag{2}$$

$$= \frac{1}{3} - \frac{-1}{3} \tag{3}$$

$$\int_{-1}^{1} x^2\,dx = \frac{2}{3} \tag{4}$$

Suppose we needed to calculate the definite integral of some function. Consider the example

below,

$$\begin{aligned}\int_{-1}^{1} x^2\,dx &= \left(\frac{x^3}{3}\right)\Big|_{-1}^{1} \\ &= \frac{(1)^3}{3} - \frac{(-1)^3}{3} \\ &= \frac{1}{3} - \frac{-1}{3} \\ \int_{-1}^{1} x^2\,dx &= \frac{2}{3}\end{aligned}$$

To customize appearance of something like $\frac{-1}{3}$, we have a few options. First, we could write $-\frac{1}{3}$. Alternatively, we could insert "phantom" space, $\frac{-1}{3}$. One wild idea is, $\frac{-1}{3}$.

Practice: Write and solve a simple polynomial limit problem using aligned equations, or a derivative calculation.