Mathematical Me

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Foresee
MATH 2415.008: Calculus III
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<div align="center">Mathematical Me</div>

The following equations encapsulate my life rather completely:

$$K_{n+1} = K_n + \alpha P_n + \beta C_n + \gamma R_n \tag{1}$$

$$S(T, E) = S_{\max}\left(1 - e^{-\lambda T}\right) + \mu E \tag{2}$$

$$\text{Premium} = BS(S, K, r, \sigma, t) + \eta \cdot \mathcal{N}(0,1), \qquad \eta \to \infty \tag{3}$$

$$I = \kappa \cdot \text{Skill} \cdot \text{Intent} - \delta \cdot \text{Risk}^2 \tag{4}$$

$$F = \int \frac{\partial\,\text{Immersion}}{\partial\,\text{Pages}}\,\mathrm{d}(\text{Pages}) + \int \frac{\partial\,\text{Immersion}}{\partial\,\text{Prose}}\,\mathrm{d}(\text{Prose})$$
$$+ \int \frac{\partial\,\text{Immersion}}{\partial\,\text{World}}\,\mathrm{d}(\text{World}) + \int \frac{\partial\,\text{Immersion}}{\partial\,\text{Characters}}\,\mathrm{d}(\text{Characters}) \tag{5}$$

In equation 1, I am looking at my cumulative knowledge growth, which models how practical coding, challenges, and research accumulate over time. Mathematically, each component contributes linearly, so balancing them according to their weights maximizes overall growth, reflecting my approach to learning efficiently. In equation 2, I am examining my skill as a function of time and efficiency. The partial derivatives $\frac{\partial S}{\partial T}$ and $\frac{\partial S}{\partial E}$ and the limit $\lim_{T\to\infty} \frac{\partial S}{\partial T} = 0$ show that efficiency drives growth more than time, guiding me to focus on deliberate effort rather than long hours. In equation 3, I am analyzing quantitative analysis premiums through a Black–Scholes model with an added stochastic noise term. The limit $\lim_{\eta\to\infty}$ Premium demonstrates that randomness dominates, illustrating how real outcomes feel unpredictable despite understanding the formulas. In equation 4, I am quantifying my real-world impact, combining skill, intent, and risk. The quadratic risk term shows nonlinear penalties, so I must carefully calibrate my actions to maximize meaningful contributions in projects like my research paper and work with the IT Army of Ukraine. Finally, in equation 5, I am modeling fun as immersion derived from reading progression fantasy. Evaluating partial

derivatives with respect to Pages, Prose, World, and Characters reveals which books provide the strongest engagement per axis, with *Cradle* excelling in Pages and Characters, *The Stormlight Archive* in World, and the *Azura Ghost* series in Prose, allowing me to quantify and prioritize my enjoyment mathematically.

Works Cited