

**Project Based Math 112, Fall 2001**  
**Project #3 — The Sinister Serum of Dr. Jekyll**  
**Due Last Class**

Part 1

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Mr. Edward Hyde  
London, England  
14 November, 1885

Math 112 Students  
Cornell University  
Ithaca, NY 14853

My Learned Associates,

You are all aware of my regrettable situation; that through a series of experiments, Dr. Henry Jekyll fragmented his personality, refining himself and creating me; that control has switched unpredictably between us and we have lived two separate lives in a shared body, to what extent that is possible. Knowing that our well-being is inexorably unified, we have formed an uneasy truce. That has ended. My alter ego has developed a stabilizing serum which would, when properly administered, prevent future personality changes. He means to suppress me forever!

I became aware that he was working towards such a serum from his research journal, which he leaves unhidden—with a tantalizing outline of his work, but just enough mathematical detail missing that I cannot re-construct the process. He completed the serum today. I would have been lost but for a miraculous turn of fortune: as he was preparing to inject his first dose, control was exchanged. I have been granted an opportunity to save myself from oblivion, but my only hope is to master his invention. If I am to survive I must learn to use the stabilizing serum; I must seize control of this body. There is more at stake than my existence. The brilliant Dr. Jekyll is increasingly mad. I have considered taking my life to bring his demented and profane experiments to an end, but I have been too weak, too selfish. Soon, such drastic measures will either not be required, or not be possible.

The good doctor's notes should permit me to reproduce the serum without trouble, but the concentration of serum in my blood must remain within certain bounds for it to be both safe and effective. I am personally unable to determine an appropriate dose size and frequency. That is why I have turned to you. Your mathematical abilities far exceed my own; you are doubtlessly equal to the challenge. I have enclosed a copy of the journal, I can only hope that no further information is needed.

I desperately await your response. I will pass the next several days in a room secured by locks with combinations known only to me; it is a crude obstruction and will buy me but a little time. This is my final battle with an adversary that I have come to respect and fear and who, until now, I believed that I could never escape. With your help, I may yet prevail.

Yours sincerely,

Mr. Edward Hyde

Part 2  
One month later

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Mr. Edward Hyde  
London, England  
14 December, 1885

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Cornell University  
Ithaca, NY 14853

My Studious Benefactors,

I am unspeakably grateful for the help that you have given me. Your calculational efforts have allowed me to suppress the diabolical Dr. Jekyll for an entire month, but it has taken a toll. The frequent need to intravenously administer the stabilizing serum has left my arms covered in needle tracks that would impress a heroin addict and has prevented me from sleeping through the night—indeed, I live in constant fear of missing a nocturnal dose and disappearing forever into the abyss of Jekyll's demented mind.

A better solution may exist. I have discovered a new portion of my alter ego's research journals; he was planning to produce a form of the serum to be taken orally. His notes are complete enough that I have managed to manufacture the potable elixir. Dr. Jekyll determined that the ingested serum would have an important advantage over the injected form; it is introduced into the bloodstream gradually, allowing larger doses to have prolonged effectiveness without causing an overdose. He tantalizingly scribbled in his notebook that the new serum needs only to be ingested three times per day, a vast improvement over my current situation.

Once again, all necessary information seems to be provided in the doctor's journal and, once again, my ignorance of mathematics prevents me from calculating an appropriate dosage. Therefore I must, once again, rely on your skills and charity. I have enclosed a copy of this section of his journal.

My continued existence is in your capable hands.

Yours sincerely,

Mr. Edward Hyde