MAT123, Paper Homework 6
due in recitation the week of 10/26

After your stellar performance in the Quidditch finals during your Junior year, you have been offered a full athletic scholarship at Stony Brook. Naturally, you and your parents are thrilled that you wont have to pay for school (although you could use a new Firebolt). You take the $10,000 that you have been saving for expenses and head to Gringotts to deposit it in an investment fund for the next five years. Gringotts offers you the following choice:

- You can put your money in the Hufflepuff fund, which pays 5.4% annual interest, compounded annually.

- You can put your money in the Gryffindor fund, which pays 5.2% annual interest, compounded quarterly. If you withdraw your money at any time before the five years have passed, you pay a penalty of $100.

- You can put your money in the Slytherin fund, which pays 5.1% annual interest, compounded continuously. If you withdraw your money at any time before the five years have passed, you pay a penalty of $100 and ... well, you dont want to know what else.

1. Write equations for $H(t)$, $G(t)$, and $S(t)$, where each describes the amount of money in your account at any time t (t is in years, but is not necessarily an integer).

2. Which fund is the better investment if you leave your money in for the full 5 years? Which fund is the better investment if you will withdraw your money after 4 years?