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SIMIODE Systemic Initiative for Modeling
Investigations and Opportunities with Differential Equations

STUDENT VERSION COLLEGE BOUND

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STATEMENT

A friend of your family recently gave birth to a little girl and she wants to get right into a savings plan for all four years of her daughter's college education. She has nothing in a college account, indeed, she just paid off her student loan. Miracle of miracles! She figures to start the savings plan on her daughter's first birthday. Let us suppose the child was born on first of August. Traditionally colleges begin in mid August.

Build a mathematical model to help her realize her dream which is to have the money in place to pay cash for each of four years of her daughter's college education at the start of her daughter's first day of college.

Make and state clear, reasonable, and relevant assumptions. Defend the assumptions with a rationale. Use the assumptions to build the model and conduct some sensitivity analyses on your quantities, e.g., (1) if this woman wants her daughter to go to an elite school or a state college or a community college, (2) what interest rates and tuition increase rates might be in effect, and (3) when the child enters college.

Formulate a one page write-up telling her of your assumptions, what she must do, and how she might have options (which you will have discussed in your sensitivity analysis in your report to your teacher).

Also submit a detailed analysis in support of your write-up for your teacher.