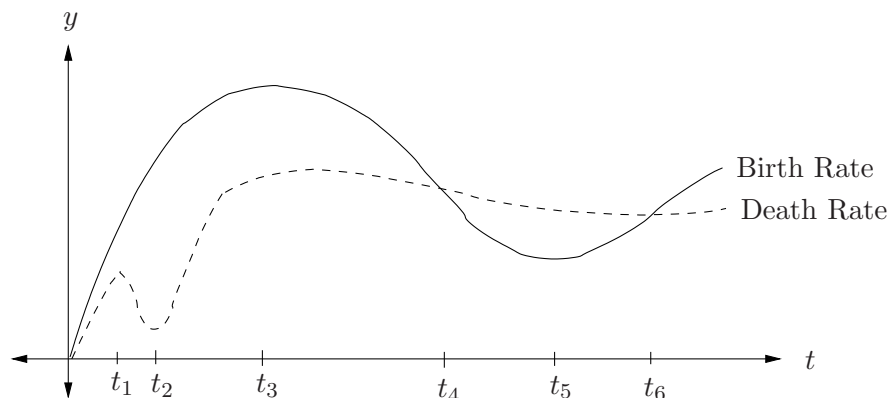


9. (8 points) Last year a local entomologist studied the birth and death rate of mosquitos in the Ann Arbor area during the month of May. His research yielded the following graph.



(a) Which of the labelled times t_1 through t_6 is the time when there were the largest number of mosquitos in Ann Arbor during May?

The largest number of mosquitos in Ann Arbor during May occurred at $t = t_4$. Up to this point more mosquitos are being born then die off, so our number of mosquitos is increasing. Between t_4 and t_6 more are dying then being born, so we are losing mosquitos. After t_6 we are gaining mosquitos again, but since the area between the Death Rate and Birth Rate is greater from t_4 to t_6 then after t_6 , we still have less mosquitos then we did at $t = t_4$.

(b) Which of the labelled times t_1 through t_6 is the time when the quantity of mosquitos in Ann Arbor was increasing most rapidly during May?

The quantity of mosquitos is increasing most rapidly when there is the greatest difference between the Birth Rate and the Death Rate. This occurs when $t = t_2$.

(c) Sketch a possible graph of the number of mosquitos alive during the month of May on the axes below. Make sure to clearly indicate any maxima, minima, or inflection points.

