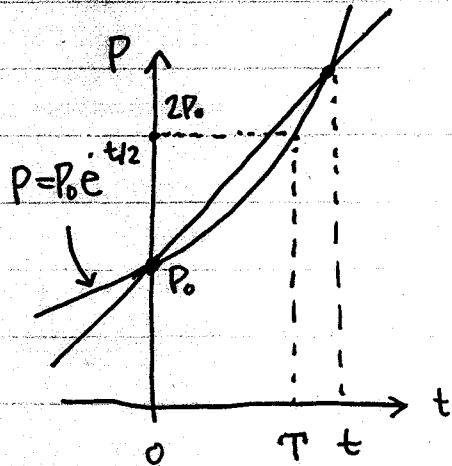


Show all work on this sheet, including mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation/syntax. Box short final answers.



- (1) a) For the graph of population versus time shown, find an expression for the slope of the secant line shown in the figure (i.e., between $t=0$ and a general value of t).
- b) Write an expression involving limit notation for the slope m_{tan} of the tangent line at $t=0$.
- c) Later we will discover that $m_{\text{tan}} = P_0/2$. Given this fact, write the equation for the tangent line at $t=0$ (in the form $P = \text{"linear function"}(t)$.)

- d) Find a formula for the time T it takes for the population to double (compared to its value at $t=0$).