

11. (9 points) Recall Hanky- and Pankytowns? On the first exam, we saw that the population of Pankytown, in thousands, could be modeled by

$$P(t) = 50(0.8)^t$$

where t is the number of months after February, 2001 when valentines were banned in Pankytown.

(a) At what rate was the population of Pankytown changing in May of 2001?

(b) We also found in Exam 1 that the population of Hankytown (in thousands) was given by

$$H(t) = 9 \cos\left(\frac{\pi t}{6}\right) + 11$$

with $t = 0$ representing the month of February, 2001. Is there a time (or times) during the first 18 months after February, 2001, that the models indicate that the populations of Pankytown and Hankytown are changing at the same rate? If so, when? If not, explain why not. Clearly explain how you found your answer.