

10. [13 points] The blockbuster action movie *Mildred's Adventures with Calculus!* was just released. During the first week after the premiere, 2.5 million people went to see it. The studio has conducted a study to gauge the impact of the film on audiences, and found that: *the number of tickets sold in a given week is 60% of the number of tickets sold the previous week.* Assume that this process repeats every week.
- a. [5 points] Let p_k be the number of movie tickets, in millions, sold during the k th week after the premiere of the movie. Determine p_2 , p_3 and a formula for p_k .
- b. [6 points] A movie ticket costs \$8. Let T_n be the total amount of money earned in ticket sales, in millions of dollars, during the first n weeks the movie has been exhibited. Determine T_3 and a closed formula for T_n . Show all your work.
- c. [2 points] Determine the value of $\lim_{n \rightarrow \infty} T_n$.