Problem 1: (10 points) consider the function $f(x) = \dfrac{x+1}{x^3}$ with $f'(x) = \dfrac{x+2}{x^3}$ and

$f''(x) = \dfrac{x+3}{x^4}$.

   (a) Find the intercepts.

   (b) Find the critical numbers.

   (c) Find inflection points.

   (d) Find intervals where the function is concave up and those where the function is concave down.

   (e) Find the asymptotes.

Problem 2: (10 points) A building has 100 apartments. At \$400 per month, each apartment can be rented. For each \$10 per month increase, there will be two vacancies with no possibility of filling them. What rent per apartment will maximize monthly revenue?