

10. (12 points) You are in charge of ticket sales for the U-M/Ohio State football game next year. Fans can buy pre-season tickets prior to September 1, 2006 for \$22.50 each. After September 1st, the price will be \$25 per ticket. The \$25 tickets are called term tickets. It turns out that pre-season ticket sales are a good predictor of term ticket sales, though the relationship is somewhat complicated. The number of term tickets sold,  $T(x)$  (in thousands), is a function of the number of pre-season tickets sold,  $x$  (in thousands), and is given by:

$$T(x) = -0.02x^2 + 1.9x + 8.$$

Assume that the maximum capacity of the stadium is 115,000. What number of pre-season and term tickets should be sold to maximize revenue? Be sure to completely justify your answers—using techniques of calculus—(i.e., merely a graph or table will not suffice).