QUIZ 5 - MATH 111 Thursday, October 5

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Suppose the quantity of a certain contaminant in a lake was found to be 4 tons in 2010. By 2023 that amount had increased to 4.91 tons.

   (a) Assuming a linear trend find a model $C(t)$ for the amount C of contaminant in the lake in terms of time.

   (b) Predict, using your model, how contaminated the lake will be in 2030.

   (c) Research has shown that some species will become extinct when the level of contaminant reaches 7 tons. When does your model predict that this critical event will occur?

2. [4 points] A given parabola has its vertex at the point $(7, -3)$ and passes through the point $(15, 19)$. Find an equation for the parabola and leave it in the general form.

3. [4 points] Imagine that you are a volunteer manager at a small town community theater. Data shows that when the ticket price is fixed at \$5 then all 75 seats are occupied. When the price is raised to \$11, then only 45 people attend.

   (a) Assuming that attendance A depends linearly on the ticket price p, find an equation for $A(p)$.

   (b) Write down an equation for the theater's revenue R and decide how to set the ticket price so that the theater's revenue is maximized.