

Name ..... Section .....

Quiz 13B

**IN COMPLETING THE FOLLOWING PROBLEMS, SHOW ALL WORK UNLESS OTHERWISE NOTED. NO WORK MEANS NO CREDIT.**

**Use your calculator to come up with a function  $f$  to model the following population. When making your model, make sure you choose the type that best fits the data. [2 pt]**

x (days)	.5	1	1.5	3	4	7	8	9	10
y (bugs in thousands)	0.36	0.54	0.76	2.1	3.7	9.70	10.75	11.4	11.708

**Use the model you constructed to answer the following? [1 pt each]**

figure out when the bug population will be 4,000.

When will the bug population be 14,000?

What is the long term bug population? (i.e the population after a very long time)

**Solve the following system of equations.** [3 pts]

$$x^2 + y^2 = 49$$

$$x^2 - 7y = 49$$

**Give a solution to the following system of inequalities. (Hint: Graph the system first)** [2pts]

$$y \leq x^2$$

$$x > 0$$

$$x < y$$