Week 6: Wrap-Up Activity

First Name	Last Name	GRC Student ID #

You must SHOW YOUR WORK for full credit.

1. **(8 points)** Let $P(t) = 32(1.047)^t$ give the population of a town (in thousands) in year t.

   a. What is the town's initial population?

   b. By what percent does the town grow each year?

   c. What is the population after 7 years?

   d. Interpret your answer from part c. using the context of the situation.

2. **(6 points)** A vehicle purchased for $32,500 depreciates at a constant rate of 5% each year. Determine the approximate value of the vehicle 12 years after purchase

3. Let $h(x) = 3(4)^{-x} + 2$.

a. **(3 points)** List all the transformations applied to $f(x) = (4)^x$ to obtain the graph of $h(x)$. (Make sure to list the transformation in order.)

b. **(5 points)** Sketch the graph of $h(x)$. Make sure to label at least one point and the horizontal asymptote.