8.04 - Homework #1 - 8 all

Use transformations to graph each exponential function.

1) \( f(x) = 5^x + 2 \)  
2) \( f(x) = 2 \cdot 3^x \)  
3) \( g(x) = 2^{x+3} \)  
4) \( h(x) = 4^{x-1} - 3 \)  
5) \( k(x) = 3 \cdot 2^x + 1 \)

6) The population of an endangered bird is decreasing at a rate of 0.75% per year. There are currently about 200,000 of these birds. How many birds will there be in 100 years later?

7) An investment of $75,000 increases at a compounded annual rate of 12.5% per year. Find the value of the investment after 30 yr.

8) From 1990 to 1997, the number of cell phone subscribers \( S \) (in thousands) in the US can be modeled by, \( S = 5535 \cdot (1.413)^x \) where \( x \) is number of years since 1990
   a. Identify the growth factor and annual percent increase
   b. Sketch a graph of the model
   c. In what year was the number of cell phone subscribers about 31 million?
   d. According to the model, in what year will the number of cell phone subscribers exceed 90 million?
   e. Estimate the number of subscribers in 2010.