Recall: A bacteria colony C has population $C(t)$, where t is measured in hours since the colony was established. The formulas for this function is

$$C(t) = 100 \cdot e^{2t}$$

d. [3 points] Find a formula for $g(P)$, a function that gives the amount of time (in hours) it takes for colony C to reach P bacteria.

Answer: $g(P) =$ _____

4. [7 points] Let $g(x) = 2 \cdot (0.5)^{-3x} - 6$.

a. [5 points] List the transformations you need to apply to the graph of $y = 0.5^x$ to transform it to that of $y = g(x)$. Fill each space with either a number or one of the phrases below, as appropriate. (Leave the second blank empty for reflections.)

Shift it to the left	Stretch it horizontally	Reflect it across the y-axis
Shift it to the right	Compress it horizontally	Reflect it across the x-axis
Shift it up	Stretch it vertically	
Shift it down	Compress it vertically	

First, _____ by _____

then, _____ by _____

then, _____ by _____

then, _____ by _____

b. [2 points] Give equations for all vertical and horizontal asymptotes of $g(x)$. If there are none, write None.

Answer: Vertical Asymptotes: _____

Answer: Horizontal Asymptotes: _____