8. [10 points]

a. [4 points] A corporation owns two factories that produce light bulbs. The factories are located in Ann Arbor and Detroit. On one particular day, both factories begin producing light bulbs at 6 am. Let \( a(t) \) be the total amount of light bulbs that the factory in Ann Arbor produced that day, \( t \) hours after 6 am. Find a formula for the following functions in terms of transformations to the function \( a(t) \).

i) Let \( g(t) \) be the total amount of light bulbs produced by the factory in Ann Arbor so far that day, \( t \) hours after 9 am.

\[ g(t) = \phantom{a(t)} \]

ii) The factory in Detroit is larger and produces double the amount of light bulbs than the factory in Ann Arbor three times faster. Let \( d(t) \) be the total amount of light bulbs produced by the factory in Detroit so far that day, \( t \) hours after 6 am.

\[ d(t) = \phantom{a(t)} \]

b. [6 points] A company sells bread to a small city. The company can produce \( L(w) \) loaves of bread in a month with \( w \) kilograms of wheat. Let \( p_0 \) be the average amount of wheat (in kilograms) that the company uses each month and \( q_0 \) be the average amount of loaves the company produces monthly. Answer the following questions, the function \( L \) and the constants \( p_0 \) and \( q_0 \) may appear in your answers.

i) This month, the company used half the average amount of wheat for their monthly production of bread, hence it will produce \( \phantom{L} \) loaves of bread.

ii) Find an equation expressing the following fact: If the company uses 100 kilograms more than the average amount of wheat for their monthly production of bread, then it will produce 12% more than their average monthly production of bread.

Equation: \( \phantom{L} \)