1. Let $f(x) = x + \frac{1}{x}$

(a) What is $f \circ f(x)$?

(b) What is the domain of $f \circ f(x)$?

2. A package of spinach in New York City has 100 E Coli bacteria, and the number of bacteria in the spinach triples every hour.

(a) Give a formula $E(t)$ for the number of bacteria in the spinach after $t$ hours.

(b) How many bacteria are present after 4 hours?

3. Let $f(x) = 4 - x$ and let $g(x) = e^x$.

(a) What is $f \circ g(x)$?

(b) What is the inverse function of $f \circ g(x)$?

(c) What is the domain of the inverse function?

(d) What is the range of the inverse function?

4. Suppose $f(x)$ and $g(x)$ are continuous functions, $f(1) = 4$, and

$$\lim_{x \to 1} [3f(x) - 2g(x)] = 8$$

What is $g(1)$?

5. Let $g(x)$ be a function such that

$$2x \leq g(x) \leq \cos(2\pi x) + 1$$

for every $x$. What is $\lim_{x \to -1} g(x)$?

6. Suppose $h(x)$ is continuous on the interval $[1, 2]$, $h(1) = 2$ and $h(2) = 17$. Is there a number $c$ such that $h(c) = 12$? Explain why or why not.