5. [8 points] Remember to show your work carefully throughout this problem.
   Algie and Cal go on a picnic, arriving at 12:00 noon.
   
   a. [5 points] Five minutes after they arrive, they notice that 5 ants have joined their picnic. More ants soon appear, and after careful study, they determine that the number of ants appears to be increasing by 20% every minute. Find a formula for a function $A(t)$ modeling the number of ants present at the picnic $t$ minutes past noon for $t \geq 5$.

   Answer: $A(t) =$

   b. [3 points] Algie and Cal notice that their food is, unfortunately, also attracting flies. The number of flies at their picnic $t$ minutes after noon can be modeled by the function $g(t) = 1.8(1.25)^t$. Algie and Cal decide they will end their picnic when there are at least 1000 flies. How long will their picnic last? Include units.

   Answer: 

6. [6 points] Consider the function

   $$R(w) = 2 + (\ln(w))^\cos(w).$$

   Use the limit definition of the derivative to write an explicit expression for $R'(\pi)$.

   Your answer should not involve the letter $R$. Do not attempt to evaluate or simplify the limit.

   Please write your final answer in the answer box provided below.

   Answer: $R'(\pi) =$