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: $R'(\pi) =$