7. [10 points] Sebastian has chartered a helicopter which is rising straight up in the air, but he is scared of heights. Let $A(w)$ be Sebastian's fear (in "scared units") when he is w km above the ground. For $0 < w \leq 2$, a formula for $A(w)$ is given by

$$A(w) = \frac{w^2 + 2}{w^w + 1}.$$

a. [5 points] Use the limit definition of the derivative to write an explicit expression for the instantaneous rate of change of Sebastian's fear, in scared units per km, when he is 1.5 km above the ground. *Your answer should not involve the letter A. Do not attempt to evaluate or simplify the limit.*

Answer: $A'(1.5) =$

b. [5 points] When he has reached a height of 2 km above the ground Sebastian gets control of his fear and his fear starts decreasing at a constant rate of 0.8 scared units per km. Write a formula for a piecewise-defined continuous function $A(w)$ giving Sebastian's fear, in scared units, for $0 < w < 3$.

Answer: $A(w) =$ $\begin{cases} & \\ & \\ & \\ & \end{cases}$