Class Drill 9b: Rate of Change Problem (Rational Function with Peak)

A drug is administered by pill. The drug concentration (in milligrams per milliliter) in the bloodstream \( t \) hours after the pill is taken is given by the formula

\[
C(t) = \frac{0.14t}{t^2 + 1} \quad \text{for} \quad 0 \leq t
\]

(A) Find \( C(0.5) \) and \( C(3) \). (Give exact answers in symbols and then approximate answers in decimals. Include units in your answer.)

(B) Find \( C'(t) \).

(C) Find \( C'(0.5) \) and \( C'(3) \). (Give exact answers in symbols and then approximate answers in decimals. Include units in your answer.)

(D) Interpret the results of (A) & (C). (Refer to textbook example 6 on page 230 with similar question.)

(E) A graph of the concentration is shown below. Illustrate each of the quantities found in questions (A) and (C).