Working with ln Name_____

The Case of the Murdered Accountant

A coroner uses a formula derived from Newton's Law of Cooling, a general cooling principle, to calculate the elapsed time since a person has died. The formula is

$$t = -10 \ln \left[\frac{T - Rt}{98.6 - Rt} \right]$$

where T = the body's measured temperature (F°)
Rt = the constant room temperature
t = is the elapsed time in hours since death

A more accurate estimate of the time of death is found by taking two readings and averaging the two calculated times of death.

After a busy evening of income calculations an accountant was found dead in his office. At 10 a.m. the coroner measured the body temperature to be 85.6° F. A second reading measured at noon found the body temperature to be 82.6° F. Assume the room was a constant 70° F.

According to the coroner what would be the estimated time of death of the accountant to the nearest minute?