Logarithmic modelling

Name: _____ Date: _____

6 questions | 17 marks

1. For $P(t) = 15 + 6\ln(t+1)$, $t \geq 0$ weeks, find $P(0)$ and $P(3)$. [3 marks]

2. Find when the model $R(t) = 10 + 5\ln(t+1)$ first reaches 20, with t in hours. [3 marks]

3. For $R(t) = 10 + 5\ln(t+1)$ with $t \geq 0$ measured in hours, find and interpret $R'(4)$. [3 marks]

4. A scale is $S = 20\log_{10}(\frac{A}{A_0})$. What amplitude ratio gives a rise of 12 units? [3 marks]

5. The model $F(x) = a + b\ln x$ gives $F(1) = 8$ and $F(e^2) = 18$. Find a, b. [3 marks]

6. A score $30 + 12\ln(t+1)$ is fitted using data from days 0-10. Explain one reason not to trust its prediction for day 1000. [2 marks]