Practice worksheet | Differentiation and applications

Exponential growth and decay

Name: _____ Date: _____

6 questions | 14 marks

1. For $P(t) = 1200e^{0.05t}$ people, find $P'(0)$. [2 marks]

2. A mass is $M(t) = 50e^{-0.3t}$ grams. Express $M'(t)$ in terms of $M(t)$. [2 marks]

3. Find the doubling time for $Q(t) = 10e^{0.4t}$. [2 marks]

4. For $M(t) = 100e^{-0.2t}$ mg, find the rate when $M = 25$ mg. [2 marks]

5. Find the exact percentage increase in one year for $A(t) = 1000e^{0.03t}$. [3 marks]

6. A cooling excess above room temperature is $E(t) = 40e^{-0.2t}$ degrees Celsius. Does this predict the actual temperature tends to 0 degrees Celsius? [3 marks]