

# Math 2215 - Calculus 1

Quiz #4 - 2011.01.31

Solutions

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1. If  $P(t)$  is the population (in millions) of a specified group at time  $t$  years after the beginning of an observation, explain in words what the following formula represents in terms of the population:

$$\lim_{h \rightarrow 0} \frac{P(3+h) - P(3)}{h}$$

Also, what are the labels on the above given quantity?

The above formula corresponds to  $P'(3)$ , which measures the rate of population growth (or decay) at the three year mark. The growth rate is measured in millions of people per year.

2. State what the following formula is the definition of:

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

The formula given above is the definition of the derivative of  $f(x)$ , denoted  $f'(x)$ .