Quiz 1

Name & ID # : _____

Directions: Leave your final answer in exact form and box it in. You are more than welcome to write on the back if you find it necessary.

Notation: The composition of two functions is formally defined as $f \circ g = f(g)$. The set $\mathbb{R}_{\geq 0}$ denotes the collection of strictly non-negative real numbers whereas $\mathbb{R}$ denotes all real numbers.

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(1) The half-life of Bismuth-210, ^{210}Bi, is 5 days. If a sample has a mass of 200mg:

    (a) Fine the amount remaining after 15 days.

    (b) Find the amount remaining after t days.

    (c) Find the amount of time t_n required to have $\frac{200}{n}$ of the sample remain (*Hint: Exact same approach as determining half-life*).

(2) If the recommended adult dosage for a drug is $\mathcal{D}$ (in mg), then to determine the appropriate dosage c for a child of age a, pharmacists use the equation $c = 0.0417\mathcal{D}(a + 1)$. Suppose the dosage for an adult is 200mg.

    (a) Find the slope of the graph of c. What does it represent?

    (b) What is the dosage for a newborn?