

3. [11 points] The cost and amount of memory in computers has changed dramatically over time. For the t^{th} year after 2000,
- let $C(t)$ be the cost, in dollars, of 1 gigabyte (GB) of memory in year t , and
 - let $M(t)$ be the average amount of memory, in GB, in a new computer in year t .
- a. [2 points] The function $C(t)$ is decreasing over its domain $t \geq 0$. Briefly explain why this means that C must be invertible, that is, why the inverse C^{-1} must also be a function.
- b. [2 points] Suppose that the average rate of change of $C(t)$ over the interval $[10, 16]$ was -1.3 . Interpret what this means in the context of the problem.
- c. [5 points] Assume that M and C are both invertible functions. Describe the meaning of each of the following expressions or equations in the context of this problem, or explain why the expression or equation doesn't make sense in context.
- i. $M(15) = 8$
 - ii. $M^{-1}(4)$
 - iii. $M(C(10))$
- d. [2 points] Write down a mathematical equation that represents the following sentence.
- When the average amount of memory in a new computer was $\frac{1}{2}$ GB, the average cost of each GB was \$100.*

Answer: _____