

9. [10 points] Annie Ant finished building her anthill, and it immediately started eroding because of the weather. Every day, her anthill loses 1.5% of its volume. Let $v(d)$ be the volume, in cm^3 , of Annie's anthill d days after she finished building it. Assume that her anthill was 1200 cm^3 when she finished building it.
- a. [2 points] Based on the description above, answer each of the following questions. In each case, *circle the one best answer*. Note: You do NOT need to explain your reasoning.
- (i) What kind of function is $v(d)$?
- linear quadratic exponential NONE OF THESE
- (ii) Which of the following accurately describes $v(d)$?
- $v(d)$ is an increasing function. $v(d)$ is a decreasing function.
- NEITHER OF THESE
- b. [3 points] Find a formula for $v(d)$ in terms of d .

Answer: $v(d) =$ _____

- c. [3 points] Give a practical interpretation of the expression $v^{-1}(50)$ in the context of this problem. *Use a complete sentence and include units. Note that you do not need to evaluate $v^{-1}(50)$.*
- d. [2 points] Solve for a in the equation $v^{-1}(a) = 10$. *Either give your answer in exact form or rounded to the nearest 0.01.*

Answer: _____