

The statement of the problem has been included for your convenience.

On a particularly cold winter day, Nia decides to turn on her gas powered heater at 5:00 pm. Over the next few hours, she records the temperature of her house and the amount of gas that the heater has used.

Let $G(t)$ represent the amount of gas (in cubic feet) that the heater used during the first t minutes after 5:00 pm.

- c. [3 points] Circle the one sentence that gives a valid interpretation of the equation

$$(G^{-1})'(3) = 72.$$

Solution:

- (A) Nia's heater has used 3 cubic feet of gas at 6:12 pm.
- (B) The amount of gas used by the heater between 5:03 pm and 5:04 pm will be approximately 72 cubic feet.
- (C) Once the heater has used 72 cubic feet of gas, it takes about 3.6 minutes for it to use an additional 0.05 cubic feet of gas.
- (D) It will take approximately 3.6 minutes for the amount of gas used by the heater to increase
- (E) The heater uses 3 cubic feet of gas every 72 minutes.

6. [5 points] Let

$$A(w) = 5 \sin(3w) - 4^{-w}.$$

Use the limit definition of the derivative to write an explicit expression for $A'(2)$. *Your answer should not involve the letter A. Do not attempt to evaluate or simplify the limit.* Please write your final answer in the answer box provided below.

$$\text{Solution: } A'(2) = \lim_{h \rightarrow 0} \frac{5 \sin(3(2+h)) - 4^{-(2+h)} - (5 \sin(6) - 4^{-2})}{h}$$