AP Test Practice – Unit 1-3 Review HW

$$f(t) = \begin{cases} g(t) & \text{for } 0 \le t \le 12 \\ \frac{t^2}{8} - 3t + 83 & \text{for } 12 < t \le 24 \end{cases}$$

t (hours)	0	4	6	8	12
$g(t)$ (degrees Fahrenheit)	87	81.5	76	70.5	65

The temperature of a room, in degrees Fahrenheit, on a certain day is modeled by the function *f* defined above, where *g* is a continuous function and *t* is measured in hours. Values of $g(t)$ at selected values of t are given in the table above.

(a) According to the model *f*, what is the average rate of change of the temperature of the room over the time interval $0 \le t \le 12$ hours? Include units on your answer.
(b) Use the data in the table to approximate $f'(10)$. Show the computations that lead to your answer.
(c) Is *f* continuous when $t = 12$? Justify your answer.
(d) Find the exact value of $f'(20)$. Interpret the meaning of this value in the context of the problem.