1. [11 points] Brianna rides her unicycle north from her home to the grocery store and back again. The differentiable function $r(t)$ represents Brianna's distance in meters from her home t minutes after she leaves the house. Some values of $r(t)$ are shown in the table below.

t	0	1	5	7	10	12	14	16	17
$r(t)$	0	180	1050	1420	1425	980	570	220	0

a. [2 points] What was Brianna's average velocity between times $t = 7$ and $t = 12$? Include units.

Answer: _____

b. [2 points] Approximate the value of $r'(14)$. Include units.

Answer: _____

c. [3 points] For which of the following time interval(s) is it possible for $r(t)$ to be concave up on the entire interval? Circle all correct choices.

[1,7] [10,14] NONE OF THESE

Use the following additional information about Brianna's ride to answer the questions below:

- The grocery store is 1430 meters away from Brianna's home.
- It takes Brianna 8 minutes to get to the store.
- On her way to the store, Brianna does not stop at all. On her way back, she only stops once at a traffic light, which is 250 meters from her home.

d. [2 points] For which of the following time interval(s) is $r'(t)$ equal to 0 for some value of t in that interval? Circle all correct choices.

[1,5] [5,10] [10,12] [12, 16] NONE OF THESE

e. [2 points] For which of the following time interval(s) is $r'(t)$ negative for some value of t in that interval? Circle all correct choices.

[1,5] [5,10] [10,12] [12, 16] NONE OF THESE