AP Calculus – Spot Check 4 – Area and Integration

$a(t)$
(ft/sec^2)

(2, 15)   (18, 15)
15

O t (seconds)
     2   4   6   8   10   12   14   16   18

−15

(10, −15)   (14, −15)

A car is traveling on a straight road with velocity 55 ft/sec at time $t = 0$. For $0 \le t \le 18$ seconds, the car's acceleration $a(t)$, in ft/sec^2, is the piecewise linear function defined by the graph above.

(a) Is the velocity of the car increasing at $t = 2$ seconds? Why or why not?

(b) At what time in the interval $0 \le t \le 18$ other than $t = 0$, is the velocity 55 ft/sec? Why?

(c) On the time interval $0 \le t \le 18$, what is the car's absolute maximum velocity, in ft/sec, and at what time does it occur? Justify your answer.

(d) At what times in the interval $0 \le t \le 18$, if any, is the car's velocity equal to zero? Justify your answer.

_____ points out of 9