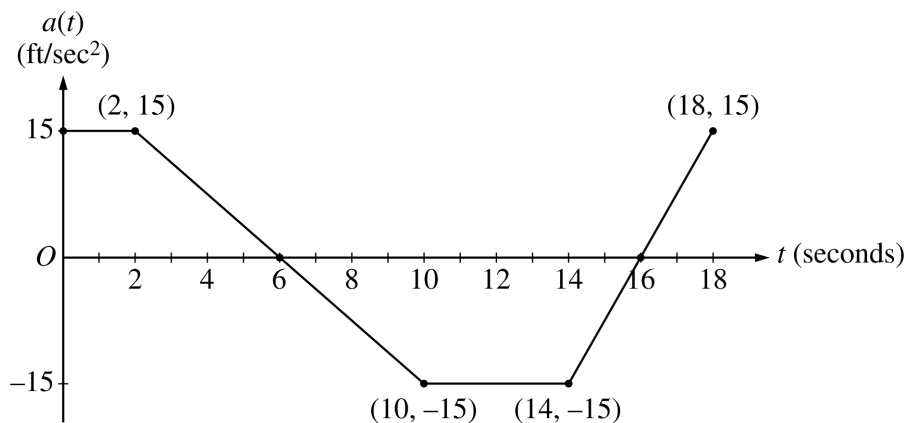


## 2001 AP<sup>®</sup> CALCULUS AB FREE-RESPONSE QUESTIONS



3. A car is traveling on a straight road with velocity 55 ft/sec at time  $t = 0$ . For  $0 \leq t \leq 18$  seconds, the car's acceleration  $a(t)$ , in  $\text{ft/sec}^2$ , 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  $0 \leq t \leq 18$ , other than  $t = 0$ , is the velocity of the car 55 ft/sec? Why?
  - (c) On the time interval  $0 \leq t \leq 18$ , 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  $0 \leq t \leq 18$ , if any, is the car's velocity equal to zero? Justify your answer.
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**END OF PART A OF SECTION II**