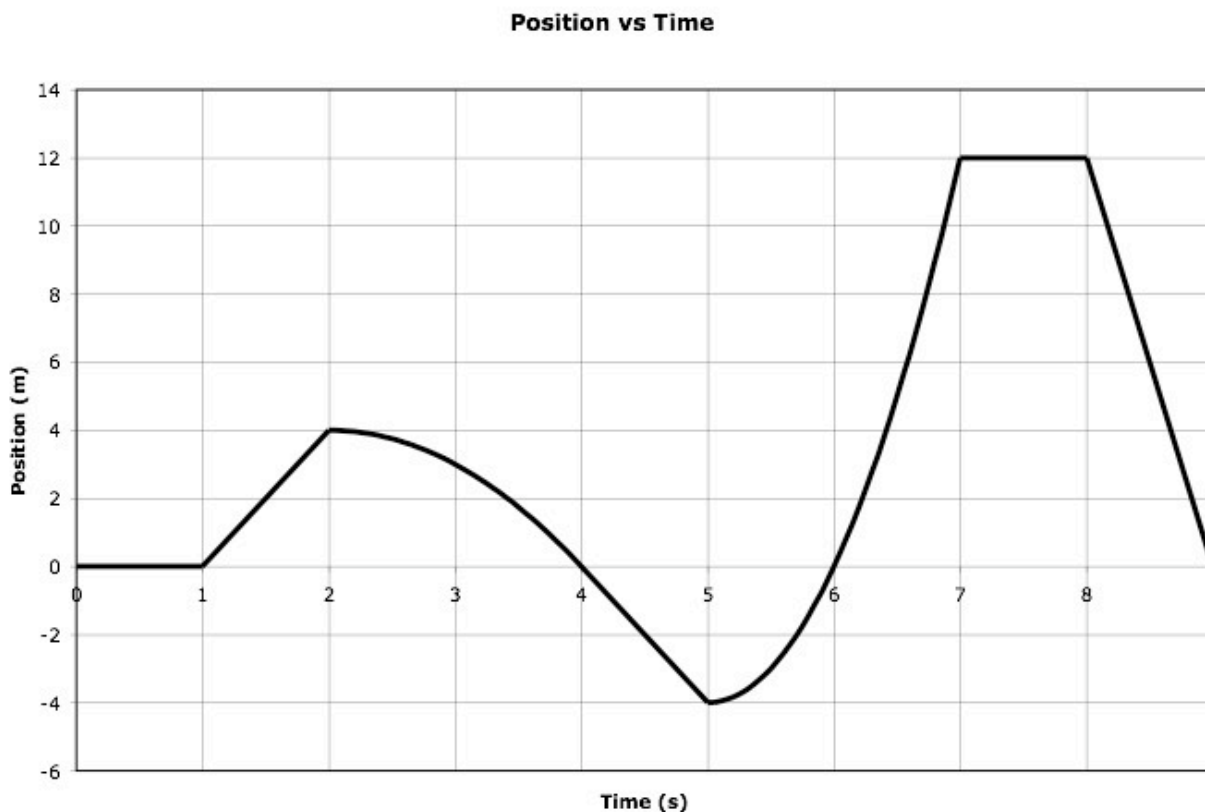


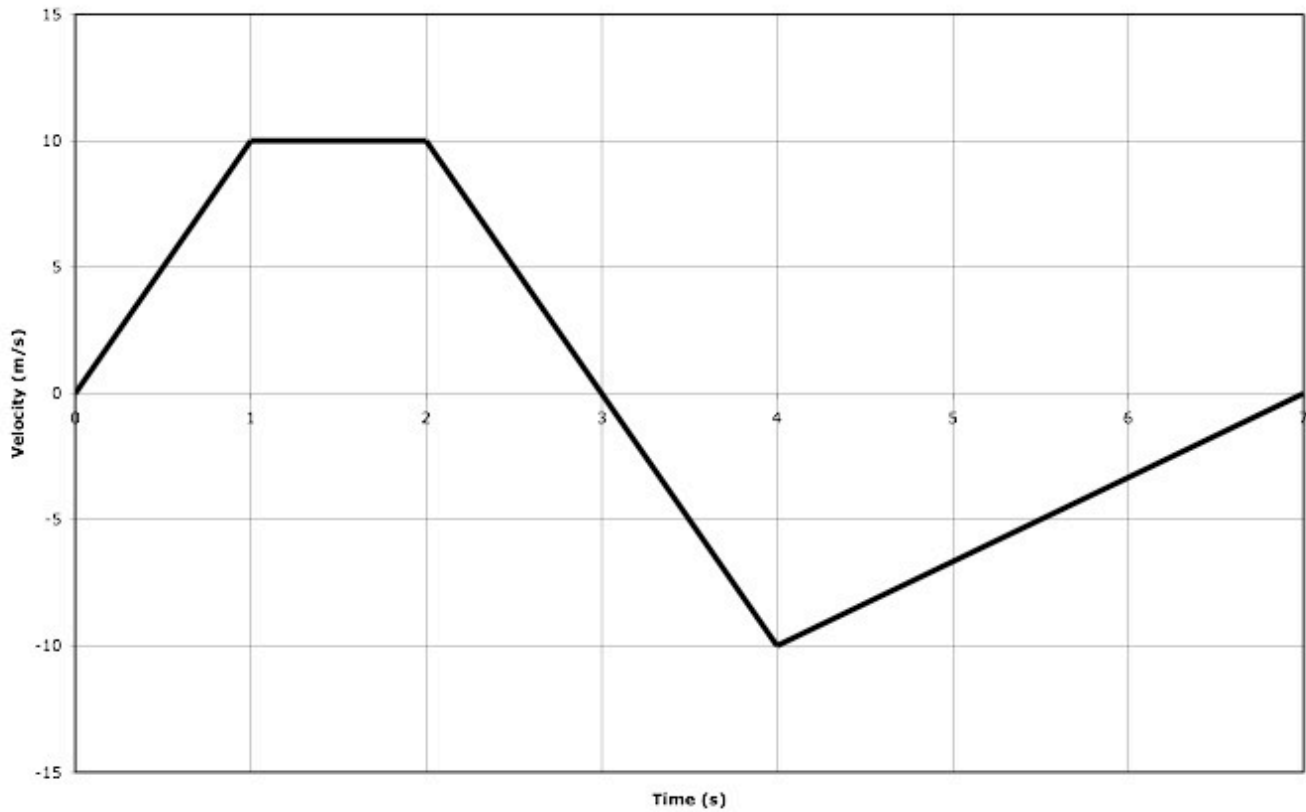
## Position/Velocity/Acceleration vs Time Practice



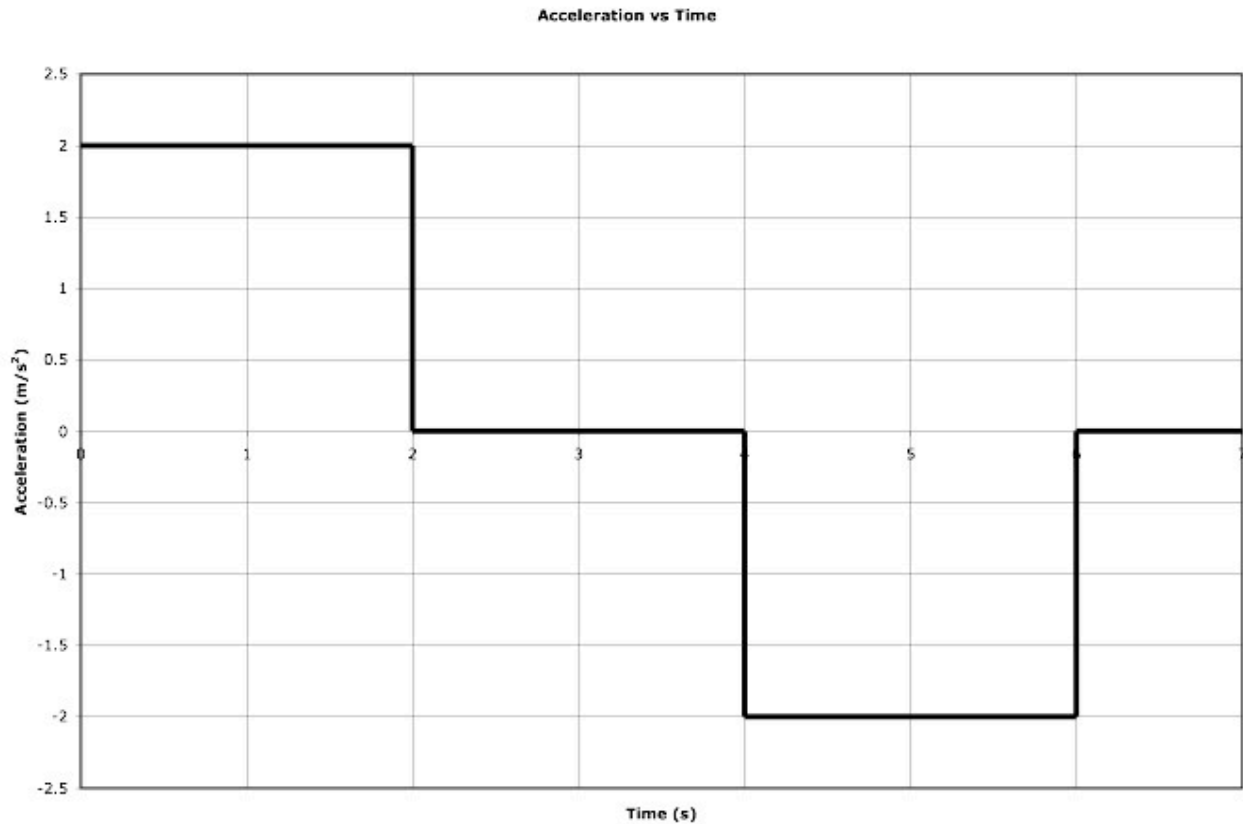
*note: the graph is parabolic from 2 to 4 seconds and 5 to 7 seconds*

- 1) During which intervals is the acceleration zero?  $(0,1)$   $(1,2)$   $(4,5)$   $(7,8)$   $(8,9)$  *{Any interval that is not parabolic.}*
- 2) Is the final position positive or negative? *Zero! Just look at the final position at 9 seconds.*
- 3) When is the velocity negative while the position is positive?  $(2,4)$   $(4,5)$   $(8,9)$  *{Determined from slopes.}*
- 4) When is the maximum speed achieved? *Biggest slope is approaching 7 from left.*
- 5) When is the acceleration positive and finite?  $(5,7)$
- 6) When is the acceleration negative infinity? *at 2, at 7 and at 8 {The velocity (slope) instantaneously decreases.}*
- 7) How should the graph be drawn to prevent infinite accelerations? *No sharp cusps. {I would have to go back and round out the points.}*

Velocity vs Time



- 8) When is the object at rest? at 1, at 3 and at 7
- 9) When is the acceleration zero? (1,2)
- 10) When is the acceleration positive? (0,1) (4,7)
- 11) Is the final position positive or negative? *checking area . . . zero. {The positive area cancels the negative area exactly so that the object ends back at zero.}*



12) When is the velocity constant? (2,4) (6,7)

13) When is the velocity positive? (0,2) (2,4) (4,6)

14) When is the velocity zero? (6,7)

15) Is the final position positive or negative? ? *checking area . . . positive. {The positive area cancels the negative exactly so that the velocity was never negative. If the object only ever had positive velocities, it could only have gone forward.}*