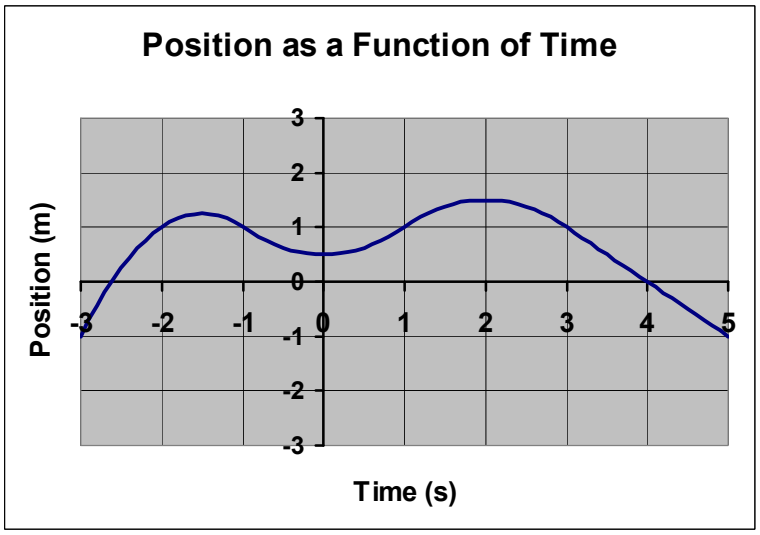
Quiz #2: Physics 221

NAME: _____

Do **YOUR OWN WORK** and **SHOW ALL OF IT!**

All answers **MUST** include appropriate **units and dimensions**.



1. The graph above shows a plot of the position (in meters) of a toy car as a function of time (in seconds) during an eight second period. Answer all of the questions below that you can using the information in the graph, ***and always explain your reasoning.*** If you think you need more information to answer a question, please explain what else you need to know.

   a) When, if ever, during that eight second period was the velocity of the car zero? Indicate all times or time intervals between $t = -3$ s *and* $t = 5$ s, and explain your reasoning.

   b) When, if ever, during that eight second period was the velocity of the car positive? Indicate all times or time intervals between $t = -3$ s *and* $t = 5$ s, and explain your reasoning.

See next page!

c) When, if ever, during that eight second period was the velocity of the car constant? Indicate all times or time intervals between $t = -3\ s$ *and* $t = 5\ s$, and explain your reasoning.

d) When, if ever, was the acceleration of the car positive. List all times or time intervals between $t = -3\ s$ and $t = 5\ s$, and explain your reasoning.

e) When, if ever, was the speed of the car increasing? List all times or time intervals between $t = -3\ s$ and $t = 5\ s$, and explain your reasoning.

f) If you were to plot the *velocity* of the car using the same choice of coordinates that was used to make the position plot above, at what time(s) would the ***velocity*** be a maximum? (remember: 0 > -1 ; "zero" is greater than "negative one".) Explain your reasoning.

g) Estmate the velocity of the car when $t = 1\ s$. (Don't just guess! Show your work!)

h) Estimate the average acceleration between times $t = 2\ s$ and $t = 3\ s$. (Show your work.)

i) Estimate the average acceleration between times $t = -2\ s$ and $t = 3\ s$. (Show your work.)