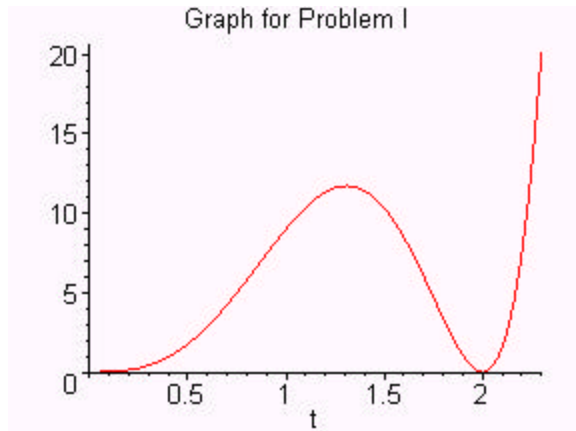


I. The position (in inches) of a particle that moves along the y axis is given by the function $p(t) = t^3(t^2 - 4)^2$ where t is measured in seconds. Below is a graph of the particle's position versus time (please note that the axes are not on the same scale). Please answer the following questions. (14 points total)

(a) What is the particle's position at $t = 1$ second? (2 points)

(b) What is the average velocity of the particle from $t = 1$ to $t = 2$ seconds? Draw the line whose slope represents this average velocity on the graph. (4 points)



(c) What is the velocity of the particle at $t = 1$ second? Draw the line on the graph whose slope represents this velocity. (4 points)

(d) Find all times at which the velocity of the particle is zero. Note: Assume that t is greater than or equal to zero, i.e. time is not negative. (4 points)

II. Below you are given the graph of $x^2 + 2xy + 3y^2 = 1$. Find the slope of the tangent line to the graph at the point $(x, y) = (1, 0)$ and draw the tangent line on the graph below. (6 points)

