Motion quiz

Given a particle is traveling in a straight line and its position from the origin at any time in the interval [1,10] is defined by the function $p(t) = 3\ln(t^4) - 2t$ answer the following...

1) Which expression would determine the particles average velocity in the time interval given?

   a. $p(10) - p(1)$ b. $v(10) - v(1)$ c. $\frac{v(10)-v(1)}{10-1}$ d. $\frac{p(10)-p(1)}{9}$

2) What is the velocity function for this particle? (this should clean up pretty nicely)

3) What is the acceleration function for this particle?

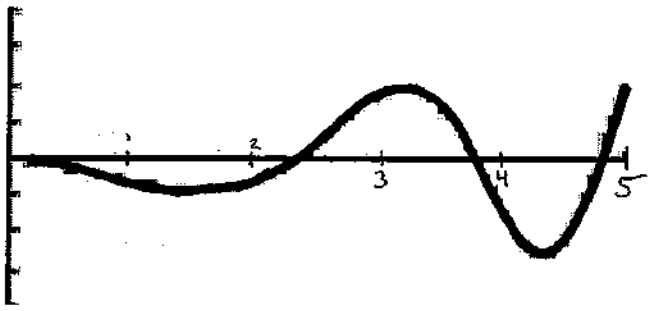
4) Is the particle moving to the right, the left, or neither at $t = 2$? Supply justification

5) Is the particle speeding up or slowing down at $t = 2$? Supply justification

6) **Set up but do not solve** the expression that could determine the total distance traveled by the particle in the time interval given.

7) Given $f(x) = (x-2)^2(x+4)$ is continuous and differentiable in the interval [-4,2] AND it is representing the position of an object moving in a straight line. Determine the c-value guaranteed by the mean value theorem in the interval given, that would determine the time when the object's instant velocity was equal to the object's average velocity.

8) Given the following graph is the position of an object moving in a straight line



a) Is the object moving right or left at t = 4? Justify

b) Is the object moving towards or away from the origin at t = 2? Justify

c) Circle a spot on the graph where the object is speeding up?

d) How would your answer to part a change if this was a velocity graph?