

**Quiz****Name**

1. A particle moves along a coordinatized line so that its position  $p(t)$  at time  $t$  is given by  $p(t) = 3t^4 - 6t^2 + 1$ . Find the velocity  $v(t)$  and acceleration  $a(t)$  of the particle at time  $t$ .

2. A particle moves along a coordinatized line so that its acceleration at time  $t$  is given by  $a(t) = 6t - 2$ . Initially it is at the origin with velocity of  $-1$  (so it has a speed of 1 and travels to the left). Find the velocity  $v(t)$  and position  $p(t)$  of the particle as a function of time  $t$ . At what time(s) does the particle stop?

3. You are given an  $xy$ -coordinate system. There is a particle at the origin  $(0, 0)$  that is subject to four forces that are represented by arrows from the origin to each of the points  $(2, 2)$ ,  $(-1, 5)$ ,  $(-4, -2)$  and  $(6, 3)$ . Draw a careful diagram of what has been described. Compute the resultant of these forces and draw the arrow that represents it into the diagram.