# Parametrics Test

The following 4 questions concern this function. At time , a particle moving in the -plane has velocity vector given by .

1. What is the acceleration vector of the particle at time ?
2. If the initial position at time is , find the position of the particle at time
3. What is the speed of the particle at time ?
4. What distance is covered by the particle from time to time ? (Write but do not evaluate an integral expression).

Choose the best answer

1. If and for any then what is in terms of ?
2. A particle moves in the -plane so that its position for is given by and , for some positive constant . The tangent line to the particle’s path at the point where has slope 8. What is the value of ?
3. The position of a particle moving in the -plane is given by the vector when . What is the magnitude of the acceleration vector at time ?
   1. 1
   2. 0
   3. 2
4. If and , write as a function of when .
5. Using the fifth-degree Taylor polynomial for , what is the error in approximating by ? That is, give an upper bound on
6. Evaluate
   1. 1
   2. -1

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