# Parametrics Test

1. 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. What is the speed of the particle at time ?
   3. If the initial position at time is , find the position of the particle at time
   4. What distance is covered by the particle from time to time ?
2. Write an integral expression for the length of the path described by and from to
3. The position of a particle moving in the -plane is given by the vector At time , what is the acceleation vector of the particle?
4. If and for any then what is in terms of ?
5. 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 ?
6. A particle moves on a plane curve such that at any time t > 0, its x-coordinate is while its -coordinate is . Find the magnitude of the particle’s acceleration at
7. The position of an object moving in the xy-plane with position function , for . What is the maximum speed attained by the object?
8. A particle moves along the path , for . What is the average speed (average rate of change) of the particle from time to time ?
9. If and , write as a function of when .
10. Using the fifth-degree Taylor polynomial for , what is the error in approximating by ? That is, give an upper bound on .