Calculus and Vectors: Motion Along a Curve

**Ex.** **1** (Noncalculator)

A particle moves in the *xy*-plane so that at any time *t*, the position of the particle is given by 

(a) Find the velocity vector when *t* = 1.

(b) Find the acceleration vector when *t* = 2.

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**Ex**.**2** (Noncalculator)

A particle moves in the *xy*-plane so that at any time *t*, , the position of the particle

is given by  Find the magnitude of the velocity vector

when *t* = 1.

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**Ex. 3** (Noncalculator)

A particle moves in the *xy*-plane so that 

The path of the particle intersects the *x*-axis twice. Write an expression that represents the

distance traveled by the particle between the two *x*-intercepts. Do not evaluate.

**Ex. 4** A particle moves in the *xy*-plane so that at any time *t*, the position of the particle is given

 by  For what value(s) of *t* is the

 particle at rest?

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**Ex. 5** A particle moves in the *xy*-plane in such a way that its velocity vector is .

 If the position vector at *t* = 0 is , find the position of the particle at *t* = 1.