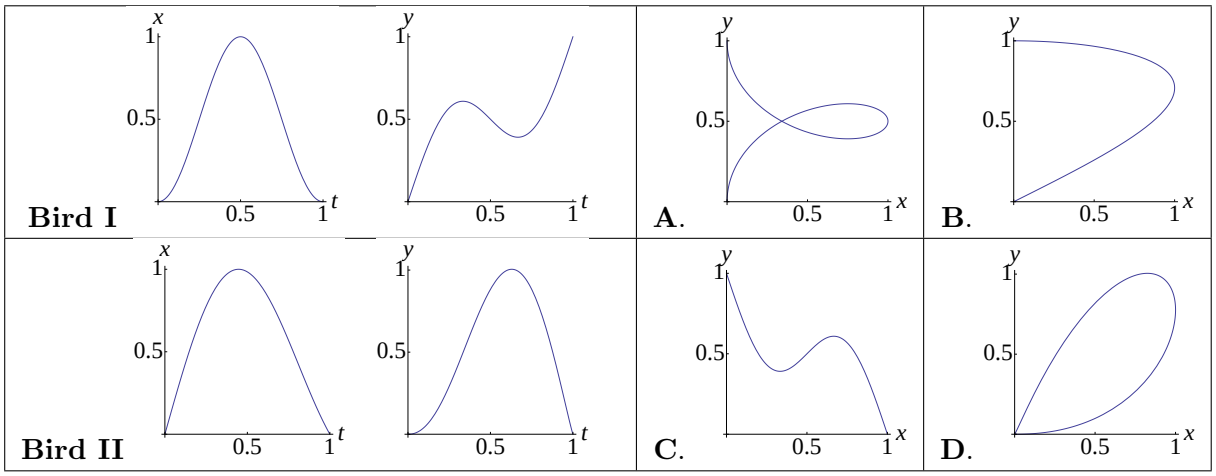
3. [14 points] The x and y positions of two birds in flight, Bird I and Bird II, are graphed below as functions of time t (see figures labeled Bird I and Bird II on the left). To the right, there are four parametric curves, A,B,C,D, showing flight paths of several birds in the x-y plane.



a. [2 points] Is the horizontal velocity of bird I zero at any time $0 < t < 1$? If so, give an approximate t value.

b. [2 points] Based on the plots shown for bird II, consider a parametric curve for the flight path for bird II in the x-y plane. Would the slope of the tangent line to the flight path curve at time $t = 0.9$ be positive, negative, or zero? Justify.

c. [4 points] One of the parametric curves A,B,C,D corresponds to bird I and another corresponds to bird II. Indicate which ones by circling the correct answers:

Bird I corresponds to:	A	B	C	D
Bird II corresponds to:	A	B	C	D

d. [6 points] A third bird flies according to the following parametric equations

$$x(t) = 1 - t^3 \quad y(t) = t^2 - t.$$

1. Find the time(s) at which the bird is flying straight horizontally right or left. Show all your work.

2. Find the speed of the bird at $t = 1$. Show all your work.