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:

<table>
<thead>
<tr>
<th>Bird I corresponds to:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird II corresponds to:</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>
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.