New 11.1 Parametric Functions

Sketch the parametric curve showing the direction. Eliminate the parameter to find an equation that relates x and y directly.

1. ,

|  |  |  |
| --- | --- | --- |
| t | X | Y |
| 0 | 0 | 1 |
| 1 | 1 | 2 |
| 4 | 2 | 5 |
| 9 | 3 | 10 |

,

|  |  |  |
| --- | --- | --- |
| t | x | Y |
| -2 | 2 | -1 |
| 0 | -2 | 0 |
| 2 | 2 | 2 |
| 3 | 7 |  |

|  |  |  |
| --- | --- | --- |
| t | x | Y |
| 0 | 1 | 0 |
|  | 1 | 0 |
|  | -1 | 0 |
|  | 0 | -1 |
|  | 1 | 0 |

|  |  |  |
| --- | --- | --- |
| t | x | Y |
| 0 | -1 | 2 |
|  | 1 | 1 |
|  | -1 | 0 |
|  | 1 | 1 |
| 2 | -1 | 2 |

Parametric Differentiation

First Derivative

 Second Derivative Trust me on this one

Given the parametric equations , find

Given the parametric equations and , write an equation of the tangent line to the curve at the point where .

Find all points of horizontal and vertical tangency for the parametric equations and .

Parametric 1969 – 1998

1. The asymptotes of the graph of the parametric equations are
2. If and , then
3. In the - plane, the graph of the parametric equations , and for , is a line segment with slope
4. A particle moves along the curve If , and , what is the value of ?
5. If and then
6. For what values of does the curve given by the parametric equations and have a vertical tangent?
7. A particle moves on the curve so that the x-component has velocity

 for At time the particle is at the point (1, 0). At time ,

the particle is at point

1. C Consider the curve in the xy-plane represented by and for .

The slope of the line tangent to the curve at the point where is

1. If and , then at is
2. A curve in the plane is defined parametrically by the equations and

 . An equation of the line tangent to the curve at is

How can you find the length of a parametric curve?

How do you find the length of a curve from

Find the arc length of a parametric curve.

The length of the path described by the parametric equations and , for

 [0, 1].

BC Length of Curve MC Problems

The length of the path described by the parametric equations and for is given by what integral?

The length of the path described by the parametric equations and with is given by what integral?

The length of the path defined by the parametric equations and from to is given by what integral?