

1.3-Vector-Valued Functions and Parametrized Curves

Idea of a Vector Function/Parametrized Curve:

Eliminating the Parameter

Vector and Parametric Equations of a Line

Examples:

Given $\mathbf{r}(t) = (t^{\frac{1}{2}} + 1)\mathbf{i} + t^{\frac{3}{2}}\mathbf{j}$:

- a) Find $\mathbf{r}(4)$ and $\mathbf{r}(t + h)$
- b) Eliminate the parameter and sketch the graph

Describe the motion of a particle whose position is given by $x = -4 \cos t$, $y = 3 \sin t$, $0 \leq t \leq \pi$

Find vector and parametric equations of the line passing through the points $(-1, 3)$ and $(5, 2)$

Eliminate the parameter to sketch the graph of the vector function $\mathbf{r}(t) = t\mathbf{i} + (t - 1)^3\mathbf{j}$. Does this graph differ from the first example? How?

On Your Own: #1,3,5,7,9,15,17,25,27,29,31,34,35