10.1 – Vector Functions and Space Curves

Vector-valued function

Limit of a vector-valued function

Continuity

Space Curve

Example 1
Describe the curve defined by the vector function $\vec{r}(t) = \langle 1 + 2t, 3 - t, 4 + 5t \rangle$

Example 2

Describe the curve defined by the vector function $\vec{r}(t) = \cos t\, \vec{\imath} + \sin t\, \vec{\jmath} + t\, \vec{k}$.

Example 3

Find a vector function that represents the curve of intersection of the cylinder $x^2 + y^2 = 1$ and the plane $y + z = 4$.

Example 4
Draw the curve with vector equation $\vec{r}(t) = \langle t, t^2, t^3 \rangle$

HW 10.1 # 1, 3, 5, 7, 11, 13, 17-22, 23, 33, 37