

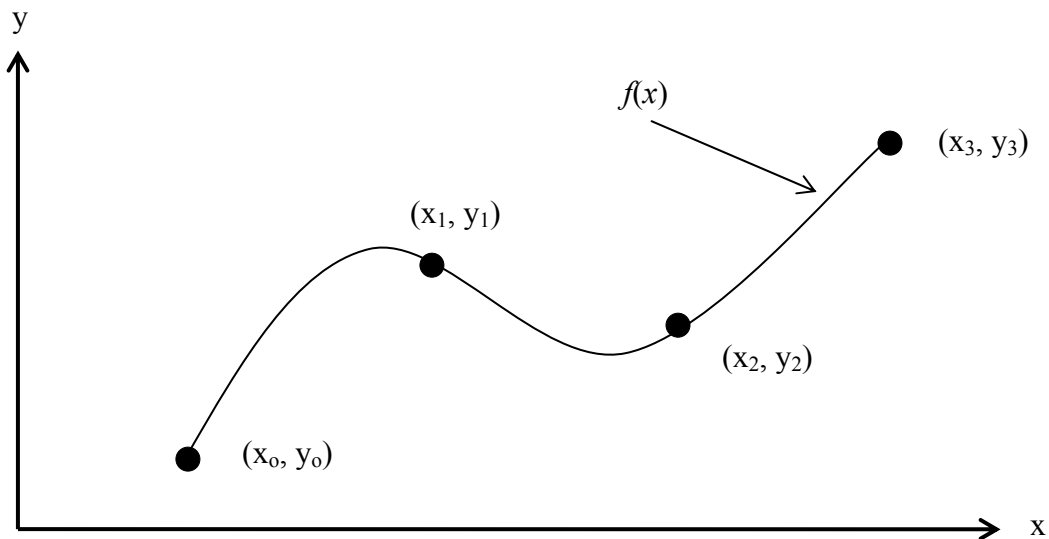
## 05.01 Definition of Interpolation

*After reading this chapter, you should be able to:*

1. Understand what Interpolation is.

### What is Interpolation?

Many a times, a function  $y = f(x)$  is given only at discrete points such as  $(x_0, y_0), (x_1, y_1), \dots, (x_{n-1}, y_{n-1}), (x_n, y_n)$ . How does one find the value of  $y$  at any other value of  $x$ ? Well, a continuous function  $f(x)$  may be used to represent the  $n+1$  data values with  $f(x)$  passing through the  $n+1$  points. Then one can find the value of  $y$  at any other value of  $x$ . This is called interpolation. Of course, if  $x$  falls outside the range of  $x$  for which the data is given, it is no longer interpolation but instead is called extrapolation.



**Figure 1** Interpolation of discrete data

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**INTERPOLATION**

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Topic	Definition of Interpolation
Summary	Textbook notes on the definition of interpolation, with graph.
Major	All Majors of Engineering
Authors	Autar Kaw
Last Revised	November 20, 2009
Web Site	<a href="http://numericalmethods.eng.usf.edu">http://numericalmethods.eng.usf.edu</a>

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