

MATH 373: CLASS 2

Polynomial has a lot of nice properties and is widely used to approximate a continuous function. We have played with it a bit yesterday. We will do more problem about polynomial today too.

1. EXERCISE

1) a) Find the polynomial of degree one that passes through the points (1,-1) and (3,3).

b) Find the polynomial of degree two that passes through the points (0,-1), (1,0) and (2,5).

c) Give two examples of polynomial of degree two that passes through the points (1,-1) and (3,3)? How many polynomial of degree two that can pass through the given two points?

d) Explain shortly why do you need $n + 1$ points to uniquely determine polynomial of degree n .

2) Use the Bisection Method to find solution accurate to $\frac{1}{10}$ of $x - \cos x = 0$ for x in the interval $[0, \frac{\pi}{4}]$.

3) Let f be a continuous function on $[0, 1]$ and $f(0)f(1) < 0$. Using the Bisection Method, how many iteration needed to approximate the root of f within the accuracy of 10^{-5} ?