```
1  //
2  // 參考 https://en.wikipedia.org/wiki/Time-frequency_analysis
3  // 其中的實例。 y(t) = cos(pi*t) + cos(3*pi*t) + cos(2*pi*t)  且 0 <=
       t  。
4  //
5
6  using System;
7  using System.IO;
8  using Matrix_0;
9
10 namespace ConsoleApp50
11 {
12     internal class Program
13     {
14         static void Main(string[] args)
15         {
16             double step = 0.09;
17             ReMatrix y;
18             int iNum = (int)(5/step);
19             ReMatrix Mat = new ReMatrix(iNum, 2);
20
21             for(int i = 0; i != iNum; i++)
22             {
23                 double t = step * i ;
24                 double[,] t2 = { { t } };
25                 ReMatrix tMat = (ReMatrix)t2;
26
27                 double[,] y1 = { { Math.Cos(1 * Math.PI * t) } };
28                 double[,] y2 = { { Math.Cos(3 * Math.PI * t) } };
29                 double[,] y3 = { { Math.Cos(2 * Math.PI * t) } };
30                 y = (ReMatrix)y1 + y2 + y3;
31
32                 Mat[i, 0] = tMat;
33                 Mat[i, 1] = y;
34             }
35             Console.WriteLine("**  時頻分析【輸出的數值結果】 (方法
                 一)  **\n");
36             Console.WriteLine("            t              y(振幅)
                 \n");
37             Console.WriteLine("\n{0}\n", new PR(Mat));
38
39             Console.WriteLine
                 ("\n=========================================\n
                 \n");
40
41             for (int i = 0; i != iNum; i++)
42             {
```

```
43                  double t = step * i;
44                  double[,] t2 = { { t } };
45                  ReMatrix tMat = (ReMatrix)t2;
46
47                  double[,] y1 = { { Math.Cos(1 * Math.PI * t) } };
48                  double[,] y2 = { { Math.Cos(3 * Math.PI * t) } };
49                  double[,] y3 = { { Math.Cos(2 * Math.PI * t) } };
50
51                  // D
52                  ReMatrix D = new ReMatrix(3, 3);
53                  D[0, 0] = (ReMatrix)y1;
54                  D[1, 1] = (ReMatrix)y2;
55                  D[2, 2] = (ReMatrix)y3;
56                  // Q特徵向量(Identity Matrix)
57                  Iden I = new Iden(3, 3);
58                  ReMatrix Q = I.Matrix;
59                  // d
60                  double[,] d = {{1}, {1}, {1} };
61                  y = Q * D * d;
62                  y = y[0, 0] + y[1, 0] + y[2, 0];
63
64                  Mat[i, 0] = tMat;
65                  Mat[i, 1] = y;
66              }
67              Console.WriteLine("**  時頻分析【輸出的數值結果】 (方法 ↵
                  二) **\n");
68              Console.WriteLine("            t              y(振幅)     ↵
                  \n");
69              Console.WriteLine("\n{0}\n", new PR(Mat));
70          }
71      }
72  }
73  //  ** 數值的輸出結果，請參見儲存庫中的程式碼 **
```