Use the following **Visual Basic** **.NET** code to generate the Excel spreadsheet for Part E of Problem Solving Exercise # 3. It is currently set up to generate the Excel 2019 spreadsheet for the Linear (1st order) fit. You will need to modify the code to generate the Excel 2019 spreadsheet for the 2nd order equation. NOTE: Before running the program, you must add a reference to the Microsoft Excel 16.0 Object Library. To do this, follow the menu sequence: **Project | Add Reference | COM | Microsoft Excel 16.0 Object Library**.

**Imports Excel = Microsoft.Office.Interop.Excel**

**Public Class Form1**

**Private Sub btnExcel\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnExcel.Click**

**'------------------------------------------------------**

**'The Setup - always the same**

**Dim oXL As Excel.Application**

**Dim oWB As Excel.Workbook**

**Dim oSheet As Excel.Worksheet**

**oXL = New Excel.Application**

**oXL.Visible = True 'this makes it so they can see what's happening**

**oWB = oXL.Workbooks.Add**

**oSheet = oWB.ActiveSheet**

**'--------------------------------------------**

**'SOLVING MX = N**

**'now you have a sheet open**

**'ENTER MATRIX M**

**oSheet.Cells(2, "A") = "=8" 'row, column -- refers to cell A2**

**oSheet.Cells(3, "A") = "=303" 'row, column -- refers to cell A3**

**oSheet.Cells(2, "B") = "=303" 'row, column -- refers to cell B2**

**oSheet.Cells(3, "B") = "=13323" 'row, column -- refers to cell B3**

**'matrix has been entered in A2..B3**

**'ENTER MATRIX N**

**oSheet.Cells(2, "E") = "=397" 'row, column -- refers to cell E2**

**oSheet.Cells(3, "E") = "=16097" 'row, column -- refers to cell E3**

**'matrix has been entered in E2..E3**

**'now put the in the inverse command in a cell**

**'Since this has to be entered as an array formula**

**'follow the directions in MS Excel and use FormulaArray**

**oSheet.Range("A6", "B7").FormulaArray = "=MINVERSE(A2:B3)"**

**'the inverse for matrix M is there in A6:B7**

**'To solve MX = N, take X = (Minverse)N**

**'So Matrix is A6:B7 times E2:E3 and put answer in A10:A11**

**'This is also an array formula operation just like above**

**oSheet.Range("A10", "A11").FormulaArray = "=MMULT(A6:B7, E2:E3)"**

**'the solution matrix X is now in A10:A11**

**oWB.SaveAs("H:\EGR1400PS3E.xlsx")**

**oXL.Quit()**

**End Sub**

**End Class**