## IBC\_Ex10

Shuyue Li

11/14/18

**Task 1**

By conducting likelihood ratio test for a complex (a + bx + cx2) model and a simple (a + bx) model, p-value of this test is ﻿0.1008, which shows that the residual sum of squares from fitting a simple model is not significantly larger than that of the more complex model, if maximum tolerable probability α is set as 0.05.

**Task 2**

**Test for four cases:**

1. **﻿ a12<a11, a21<a22**

**﻿a11,a12,a22,a21=10,5,8,4**

****

1. **﻿ a12<a11, a21>a22**

**a11,a12,a22,a21=10,5,4,8**

****

1. **a12>a11, a21>a22**

**a11,a12,a22,a21=5,10,4,8**

****

1. **a12>a11, a21<a22**

**a11,a12,a22,a21=5,10,8,4**

****

**The figures of population dynamics show that only in the circumstance of case 1, i.e. a12<a11, a21<a22, can two species coexist.**