```
/* x3_5.sas */
/* Purpose:  */

title1 'Example 3.5.';

data temp;
input y my1 th11 th12 th21;
cards;
  0 1 1 0 0
 -2 1 1 0 0
-19 1 0 1 0
-15 1 0 1 0
 -6 0 0 0 1
  0 0 0 0 1
 -2 0 0 0 1
;

proc print;
title1 'List of data.';

proc glm;
model y = my1 th11 th12 th21 /noint solution xpx inverse e;
title1 'Analysis by GLM.';

run;
```

List of data. 1

| Obs | y | my1 | th11 | th12 | th21 |
|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 0 | 0 |
| 2 | -2 | 1 | 1 | 0 | 0 |
| 3 | -19 | 1 | 0 | 1 | 0 |
| 4 | -15 | 1 | 0 | 1 | 0 |
| 5 | -6 | 0 | 0 | 0 | 1 |
| 6 | 0 | 0 | 0 | 0 | 1 |
| 7 | -2 | 0 | 0 | 0 | 1 |

/><><>

Analysis by GLM. 6

The GLM Procedure

Dependent Variable: y

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| Model | 3 | 601.3333333 | 200.4444444 | 27.97 | 0.0038 |
| Error | 4 | 28.6666667 | 7.1666667 | | |
| Uncorrected Total | 7 | 630.0000000 | | | |

| R-Square | Coeff Var | Root MSE | y Mean |
|---|---|---|---|
| 0.954497 | -42.58964 | 2.677063 | -6.285714 |

NOTE: No intercept term is used: R-square is not corrected for the mean.

| Source | DF | Type I SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| my1 | 1 | 324.0000000 | 324.0000000 | 45.21 | 0.0025 |
| th11 | 1 | 256.0000000 | 256.0000000 | 35.72 | 0.0039 |
| th12 | 0 | 0.0000000 | . | . | . |
| th21 | 1 | 21.3333333 | 21.3333333 | 2.98 | 0.1596 |

| Source | DF | Type III SS | Mean Square | F Value | Pr > F |
|---|---|---|---|---|---|
| my1 | 0 | 0.00000000 | . | . | . |
| th11 | 0 | 0.00000000 | . | . | . |
| th12 | 0 | 0.00000000 | . | . | . |
| th21 | 1 | 21.33333333 | 21.33333333 | 2.98 | 0.1596 |

| Parameter | Estimate | Standard Error | t Value | Pr > \|t\| |
|---|---|---|---|---|
| my1 | -17.00000000 B | 1.89296945 | -8.98 | 0.0009 |
| th11 | 16.00000000 B | 2.67706307 | 5.98 | 0.0039 |
| th12 | 0.00000000 B | . | . | . |
| th21 | -2.66666667 | 1.54560308 | -1.73 | 0.1596 |

NOTE: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.