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1 Introduction

In step 5, the estimate using a closed form solution is very close to what our true values for beta are. In step 7, the L-BFGS method and Nelder Mead method results did differ, and the L-BFGS mehtod was much more accurate to the true values. The easy method in step 9 is also very close and accurate to the true values. For example X5 is 3.5006 compared to the true value of 3.5.

	Estimate	Std. Error	t value	Pr($>$|t|)
X1	1.5011	0.0016	949.43	0.0000
X2	-1.0008	0.0016	-632.49	0.0000
X3	-0.2516	0.0016	-158.14	0.0000
X4	0.7490	0.0016	472.87	0.0000
X5	3.5006	0.0016	2214.91	0.0000
X6	-2.0008	0.0016	-1262.75	0.0000
X7	0.4987	0.0016	315.51	0.0000
X8	1.0028	0.0016	635.52	0.0000
X9	1.2465	0.0016	787.93	0.0000
X10	2.0010	0.0016	1267.10	0.0000

Table 1: Regression Output