

# MA 423: Matrix Computations

## Lab – 5

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### Question – 4:

The output is as follows:

\*\*\*\*\* Table representing departure from orthogonality (i.e.,  $||Q'Q - I||$ ) \*\*\*\*\*

SI No.	Condition Number	cgs	mgs	cgsrep	qr
1	1e+05	4.3249e-08	4.3272e-12	6.2884e-16	1.2291e-15
2	1e+07	0.00044732	4.0542e-10	6.0074e-16	1.2009e-15
3	1e+11	11.67	3.9263e-06	8.7662e-16	1.6302e-15

### Observation –

We can see that there is significant departure from orthogonality for cgs method with a very high condition number matrix. While using cgsrep, even at high condition number, the matrix Q remains orthogonal.