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Problem Set # 1

1.6 10/10

1.7 10/10 Short on verbal explanation.

1.10 7/10 Sort the squares of the numbers. Inefficient triple loop.

2.2 8/10 No verbal explanation.

2.4 8/10 No verbal explanation.

Grade: 20/20 with 43 total points. Good performance.

Problem Set # 2

5.2 9/10 Explain verbally the operations counts.

5.3 9/10 For b) through d) note that A is invertible iff all diagonal entries are nonzero.

5.4 4/10 Circular reasoning because you assume A is diagonal.

5.7 10/10

5.8 10/10

5.9 10/10

5.11 10/10

6.1 6/10 Solutions don't match. Why?

6.2 10/10

6.4 4/10 Where is the code?

6.5 3/10 You need to examine $x_n - 0 = x_n$.

6.6 10/10

Grade: 40/40 with 95 total points. Take your time in solving the problems.

Problem Set # 3

7.1 10/10

7.2 8/10 Why didn't the code say unbounded?

7.3 10/10

7.4 7/10 I get $(x_1, x_2, x_3) = (5, 0, 10)$.

8.3 10/10

8.4 10/10

8.5 4/10 The eigenvalues can be complex of modulus 1.

8.8 5/10 Hard to follow with typos. U_{12} is a column vector.

8.14 10/10

8.15 6/10 Ok for trace and determinant. Argument for inversion not convincing.

Grade: 40/40 with 80 total points.

Problem Set # 4

9.1 10/10

9.2 6/10 You assume the argument is a scalar.

9.6 8/10 You must also prove tangency.

9.7 6/10 Incomplete analysis

9.8 9/10 What about tangency?

9.9 9/10 What about tangency?

10.1 10/10

10.4 8/10 Why is $f(x)$ convex?

10.9 10/10

Grade: 39/40 with 76 total points.

Problem Set # 5

11.3 10/10

11.6 5/10 The translate operator does not nvoke the stretch operator.
The proof of the reversion formula is too compressed.

12.2 10/10

12.5 10/10

12.6 6/10 Code is incorrect, and the mode is incorrect. (See Wikipedia article on the beta distribution.) That's why you get a poor match to the mean.

12.16 10/10

Grade: 40/40 with 51 total points.