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MA 442
Spring 2024

Homework 5

Due February 15th on paper at the beginning of class. Justify your answers. Please let me know if you have a question or find a mistake. There are some hints on the second page.

Shifrin 6.3.2 (correct 'Show that the parametric curve...' to 'Show that the image of the parametric curve...'), 6.3.8, 6.3.12, 6.3.13a

Hints:

6.3.2. Find a point p for which you can show that if $F = 0$ on M then $F'(p) = 0$.

6.3.8. To show F' is nonzero on X it can be helpful to use the equation in part (b).

6.3.12. One way to interpret is to show that it consists of pairs of points on the unit sphere a certain distance apart.

6.3.13a. Check that F' is surjective by solving $A^T B + B^T A = C$ for B, given A orthogonal and C symmetric. Check that such a B can be found by solving $A^T B = C/2$.