

Assignment #8

Due April 29 *FIRM, AT 3:40 IN CLASS.*

3–2 #3. [*Hint: Note that you may choose orientation N so that k_1, k_2 are both positive in this case. See also the discussion of the expression of the second fundamental form in the basis e_1, e_2 on the bottom of page 145.*]

3–2 #5. [*Hint: Again see the bottom of page 145.*]

3–2 #6. [*Hint: Again see the bottom of page 145.*]

3–3 #5abc. [*FYI: See page 205 for a picture of Enneper's surface.*]

3–3 #6.

3–3 #7.

3–3 #14.

Additional problems

I. Suppose $p \in S$ is a hyperbolic point and that e_1, e_2 are principal directions. Express the asymptotic directions v as linear combinations of e_1, e_2 . [*You may assume that e_1, e_2 are normalized. This problem replaces 3–2 #1.*]

Read section 3–5 part B “Minimal Surfaces”, and then:

II. Show that Enneper's surface is minimal. [*Strategy: Check that the parameterization in 3–3 #5 above is isothermal. Then use a result in section 3–5.*]