

Assignment 5
Math 503 - Fall 2006
Prof. J. A. Pelesko
Due October 16, 2006

Below is a list of articles for problem 5 of homework 5. Some are available online, others you'll have to go to the library to find. Please make the effort to choose one that genuinely interests you. Extra credit will be given for those who had to go to the library in person! Please attach a copy of the article you select to your homework.

1. P.B. Canham, *The minimum energy of bending as a possible explanation of the biconcave shape of the human red blood cell*, J. Theoret. Biol. 26 (1970), pp. 61-81.
2. H. Deuling and W. Helfrich, *Red blood cell shapes as explained on the basis of curvature elasticity*, Biophys. J. 16 (1976), pp. 861-868.
3. W. Paulsen, *What is the shape of a mylar balloon?*, Amer. Math. Monthly 101 (1994), pp. 953-958.
4. T.I. Vogel, *Stability of a liquid drop trapped between two parallel planes*, SIAM J. Appl. Math. 47 (1987), pp. 516-525.
5. P. Concus and R. Finn, *The shape of a pendant liquid drop*, Philos. Trans. Roy. Soc. London Ser. A 292 (1979), pp. 307-340.
6. U. Seifert, K. Berndl, and R. Lipowsky, *Shape transformation of vesicles: Phase diagram for spontaneous-curvature and bilayer-coupling models*, Phys. Rev. A 44 (1991), pp. 1182-1202.
7. R. O'Keefe, *A circular catenary*, Am. J. Phys. 64 (1996), pp. 660-661.
8. M.P. Brenner, J.H. Lang, J. Li, J. Qiu, and A.H. Slocum, *Optimal design of a bistable switch*, PNAS 100 (2003), pp. 9663-9667.
9. G.R. Verma and J.B. Keller, *Hanging rope of minimal elongation*, SIAM Review 26 (1984), pp. 569-571.
10. G.A. Bliss and M. Mason, *A problem in the calculus of variations in which the integrand is discontinuous*, Trans. Amer. Math. Soc. 7 (1906), pp. 325-336.