Math 501 Spring 2016

Homework 4

Due: Thursday February 18 at the end of class. A portion of the homework will be graded (by Anusha Krishnan) and returned to you at the end of the next class. Remember to staple your homework and put your name on it.

(1) Shifrin p. 53 Problem 2

(2) Shifrin p. 53 Problem 3 c and d

(3) Shifrin p. 54 Problem 10

(4) Shifrin p. 55 Problem 14

(5) Let $z = f(x, y)$ be a surface in 3-space. Derive a formula for its Gauss curvature and mean curvature.

(6) (Extra Credit)
Let M^2 be a surface in $\mathbb{R}^3$ and $p \in M$. Show that if the Gauss curvature satisfies $G(p) > 0$, then M lies on one side of the tangent plane near the point p.