

This is the last homework that will be covered on the second exam. There will be one more homework, due after Thanksgiving. The material on that homework will be fair game for the final.

1. – (graded) What is your name, and the room in which the class currently meets?
  2. – (graded) Consider the surface  $z = 2x^2 - y^2$ . Using the usual machinery, calculate the Gaussian curvature, mean curvature and the principal vectors and curvatures **at the point**  $P(1, 1, 1)$  on the surface. Your final answers should be numerical (rather than symbolic) and you can quote any past results in presenting your answers.
  3. – (graded) p.224 – 11.
  4. – (graded) p.240 – 15. (Don't let the fractions scare you, they go away in  $\vec{x}_u$  and  $\vec{x}_v$ . Don't worry about the meaning of the term "immersed". Also, 15d has a typo: the asymptotic curves are supposed to be:  $u \mapsto \vec{x}(u_0 + u, v_0 \pm u)$  at  $\vec{x}(u_0, v_0)$ .)
  5. – (graded) Compute  $H$  and  $K$  for the parabola  $y = 1 + x^2$ , rotated around the  $x$ -axis. (Remark: the equation of the resulting surface,  $\sqrt{y^2 + z^2} = 1 + x^2$ , shows that it is not a hyperboloid of any number of sheets.)
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6. – (bonus) p.239 – 10.

7. – (bonus) p.251 – 8a.