

Reading:

- Nothing new for this assignment. Make sure you've read up through 4.5 carefully, and start looking over 4.6 for next week.

Written Assignment:

- A. Exercise 4.18 (p. 177).
- B. Exercise 4.19 (p. 177).
- C. Exercise 4.20 (p. 177).
- D. Exercise 4.21 (p. 179).
- E. Let $S \subset \mathbb{R}^3$ be the paraboloid defined by the equation $z = x^2 + y^2$, and let $c: \mathbb{R} \rightarrow S$ be the geodesic with initial conditions $c(0) = (1, 0, 1)$ and $\dot{c}(0) = (-1, b, -2)$ for some positive constant b . It can be shown that there is a positive constant a such that the z -coordinate of $c(t)$ decreases until it becomes equal to a , and increases from then on (you don't have to prove this). Find a . [Hint: Use Clairaut's theorem.]