

— Reading —

1. Read the proof of Schwarz Theorem in the lecture notes (p. 22 of the PDF file). Read textbook from Example 4 p.362 to the end of 8.4 p.368. Read 8.6 (omit the proofs).

— Exercise —

2. **Usual formulas from chain rule.** Consider a function of the form

$$\varphi(s, t) = f\left(u(s, t), v(x(s, t), y(s, t))\right).$$

Compute $\frac{\partial \varphi}{\partial s}$ and $\frac{\partial \varphi}{\partial t}$ using the chain rule.

— Problem —

3. **A partial differential equation.** Find all the C^1 functions f which satisfy the equation $x \frac{\partial f}{\partial y} - y \frac{\partial f}{\partial x} = 0$. Use a change of variables.