Mathematics A1a Homework

Academic year 2016 autumn

Due to November 3

You have to solve at least 3 out of 6!

Example 1. Prove the following.

$$(\tanh(x))' = \frac{1}{(\cosh(x))^2}$$

Note that we did this on the class, but I miscalculated it! You have to get it right!

Example 2. Where is the slope of the following function 0?

$$f(x) = x^3 - 2x^2 + 3$$

Example 3. Calculate the derivative of the following function.

$$\frac{2x-1}{x^2+1} \cdot e^{(x^2)}$$

Example 4. Calculate the derivative of the following function.

$$\cos\left(e^{\sqrt{x}}\right)$$

Example 5. Where are the two functions parallel (have the same slope)?

$$\ln(x) \text{ and } x^2 - x + 1$$

Example 6. Calculate the derivative of the following function.

$$\frac{1}{\sqrt{1+\cos^2(x)}}$$