Homework 1

Due date: March 31, 2017

Problem 1: Let

$$f(x, y) = e^{xy} \cdot x.$$

Find the partial derivatives f_x, f_y and f_{xy}.

Problem 2: Use the Fundamental Theorem of Calculus to find the derivatives of the following functions

1. $f(x) = \int_1^{3x+2} \frac{t}{1+t^3} dt$;
2. $f(x) = \int_{\sin x}^1 \sqrt{1+t^2} dt$.

Problem 3: Find $f(x)$ if $f'(x) = x\sqrt{x}$ and $f(1) = 2$.