University of Toronto
Department of Computer & Mathematical Sciences
STAB57: an Introduction to Statistics
Week 10 Assignment

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> This week's list of problems is based on the material from:
> Chapter 10, §3
> You are expected to work on this list of problems prior to the upcoming tutorial.
> Problems have the following tags:
> 👤: difficult, 📖: Book exercise, ⊖: extra exercise

Terminology and Concepts to learn:

- simple linear regression
- the gradient
- partial derivative
- odd of an event

Problem 1 👤

Compute the gradient of the following functions:

- $\frac{4y}{x^2+1}$
- $\sin(x)e^{\sin(y)}$
- $\sqrt{x^2 + y^2}$

Do the functions have a local minimum of maximum ? You can try and explain this inuititvely

Problem 2 📖

Practice your skills on simple linear regression by computing the regression coefficient $(\hat{\beta}_0, \hat{\beta}_1)$ in 10.3.5, 10.3.7