MAT137Y Test 2. Dec 3, 2021

X. Cui, V. Dimitrov, A. Malusà, B. Khesin, Z. Qian.

1. For each question below, only your final answer will be graded. **No justification is necessary.**

(1a) (2 points) Let $f(x) = e^{-x}(\ln x)^2$ and calculate $f'(x)$.

**Final Answer**

$$f'(x) = -e^{-x}(\ln x)^2 + e^{-x} \cdot \frac{2\ln x}{x}$$

(1b) (2 points) Find the equation of the line tangent to the graph of $f$ defined by $f(x) = \frac{x+1}{2x-3}$ at the point with $x$-coordinate 1.