

1. Let X_1 and X_2 be independent identically distributed random variables with density function

$$f(x) = \begin{cases} \frac{e^x}{e-1} & \text{if } x \in (0, 1) \\ 0 & \text{if } x \notin (0, 1). \end{cases}$$

Compute the moment generating function of $2X_1 - 3X_2 + 2$.