1.) (4 pts.) Use the Chain Rule to compute $f'(x)$ if $f(x) = \log_2(\sqrt{xe^x})$. Do not simplify your result.

2.) (4 pts.) Use L'Hôpital's Rule to evaluate $\lim_{x \to 0} \frac{5x - \sin x}{x}$. Be sure to include all the steps required for L'Hôpital's Rule.

3.) (2 pts.) Solve for the exact value of $x$: $4e^{2x} = 5$. Show your steps.