You may not use a calculator.

PART I. Please clearly show all of your work and explain each step.

1. (30 points) Find the following limit.

\[
\lim_{{x \to 0}} \frac{e^x - e^{-x} - 2x}{x - \sin x}
\]
2. (40 points) Differentiate the following function.

\[ y = x^{\sin x} \]

PART II. Please circle the best answer. No partial credit will be given.

3. (15 points) Is the following true or false?

\[ \lim_{x \to 0} \frac{x}{e^x} = 1 \]

A) True
B) False

4. (15 points) Find \( \lim_{x \to +\infty} xe^{-x} \sin \left( \frac{1}{x} \right) \).

A) \(+\infty\)
B) 0
C) 1
D) \(e\)
E) the limit does not exist.

SEE OTHER SIDE FOR MORE PROBLEMS.