1. (4 points) Circle the differential equation whose slope field is shown in the figure.

   A. \( \frac{dy}{dx} = \sin x \)  
   B. \( \frac{dy}{dx} = -y \)  
   C. \( \frac{dy}{dx} = x^2 + y^2 \)  
   D. \( \frac{dy}{dx} = x + y \)  
   E. \( \frac{dy}{dx} = x - 2y \)  
   F. \( \frac{dy}{dx} = \sin(x + y) \)

![Slope field image]

2. (6 points) The function \( f \) is a continuous function, some of whose values are given in the following table.

\[
\begin{array}{c|cccccc}
 x & 0 & 1 & 2 & 3 & 4 & 5 & 6 \\
\hline
 f(x) & 8 & 6 & 3 & -2 & 0 & 1 & 2 \\
\end{array}
\]

For the function \( F \) defined by \( F(x) = \int_0^x f(t)e^{-t} \, dt \), what is \( F'(2) \)?

\( F'(2) = \) ____________.

3. (6 points) Does the infinite series \( \sum_{n=1}^{\infty} ne^{-n^2} \) converge or diverge? (Show your work.)