This worksheet is worth ten points; each problem is worth two points. You must show your work to receive full credit; partial credit will be awarded where appropriate.

1. Find the derivative of the function. Simplify your answer.
   
   a. \( f(x) = xe^{x^3} \)

   b. \( g(x) = \sqrt[4]{x + 1} \)

   c. \( h(x) = \frac{x^2}{(x^2 + 1)^3} \)
2. An open box has a square base and a volume of 108 in$^3$. Find the dimensions of the box that use the minimum amount of material.

3. Suppose the quantity demanded per week of a certain dress is related to the unit price $p$ by the demand equation $p = \sqrt{800 - x}$, where $p$ is in dollars and $x$ is the number of dresses made. How many dresses should be made and sold per week in order to maximize then revenue?