Implicit Differentiation

Problem 1

Use implicit differentiation to find the derivative of $\frac{x^3}{3} + y^2 - 4xy = 0$, where y is a function of x.

Problem 2

Given that $xy = x + y^2$ and that y is a function of x, find $\frac{dy}{dx}$.

Using what you just found for $\frac{dy}{dx}$, now find $\frac{d^2y}{dx^2}$.

Problem 3

Use implicit differentiation to find the derivative of $sin(\frac{x^3}{3}) = (e^y)x^3$.