Implicit Differentiation

1. Given that $\dfrac{1}{x} + \dfrac{1}{y} = 1$,

   (a) find y' by implicit differentiation,

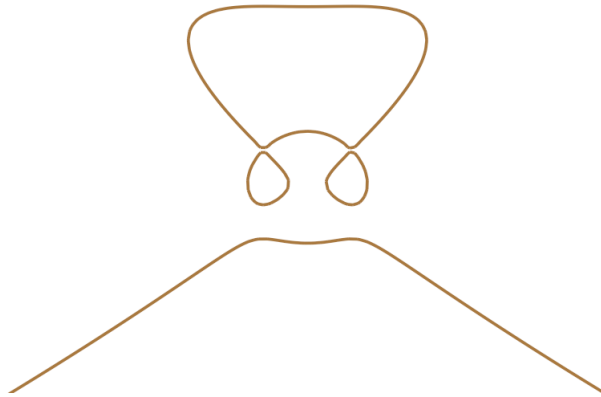   (b) solve for y in the given equation in terms of x,

   (c) differentiate the result of (b) get y', and

   (d) check that your answer in part (a) agrees with part (c) by substituting the expression for y from part (b) into the answer in part (a).

2. It is mentioned in exercise 38 that the graph of the equation

$$2y^3 + y^2 - y^5 = x^4 - 2x^3 + x^2,$$

as seen below without axes, looks like a bouncing wagon.

Find y' using implicit differentiation.