1. For each of the following,
(i) evaluate the iterated integral (when possible - one cannot be evaluated as is - find it!),
(ii) sketch the region in the $x y$-plane over which you are integrating,
(iii) change the order of integration and compute the integral again. Check your answer with that for (a) - they should be the same!)
(a) $\int_{0}^{2} \int_{0}^{4-2 x} d y d x$
(b) $\int_{0}^{1} \int_{2}^{4-2 x} d y d x$
(c) $\int_{0}^{1} \int_{x}^{\sqrt{x}} d x d y$
2. Compute each of the following integrals, getting your answers in exact form.
(a) $\int_{1}^{8} \int_{0}^{2} x^{2} y d y d x$
(b) $\int_{1}^{8} x^{2} d x$
(c) $\int_{0}^{2} y d y$
3. Find the product of your answers to parts (b) and (c) of Exercise 2. What do you notice about the result? (Write me a brief sentence, or write a concise mathematical statement containing integrals.)
