Compute each iterated integral by hand, **showing all steps** by one of the two ways done in class. The answers to the first two should be the same, the answer to number three is $\frac{36}{5}$ and the answer to number four is $\frac{163}{4}$.

1.
$$\int_{1}^{2} \int_{3}^{5} (y - 2x) \, dy \, dx$$
 2. $\int_{3}^{5} \int_{1}^{2} (y - 2x) \, dx \, dy$

3.
$$\int_0^2 \int_{y^2}^{2y} (4x - y) \, dx \, dy$$

4.
$$\int_{1}^{2} \int_{1-x}^{\sqrt{x}} x^2 y \, dy \, dx$$