6. [15 points] The curves $x = y^2 - 4y + 5$ and $x = 5 + 2y - y^2$ intersect at the points $(2, 3)$ and $(5, 0)$, as seen in the diagram below. Consider the region, $R$, bounded by the two curves.

![Diagram showing the region R bounded by the two curves.]

a. [5 points] Find an expression involving one or more integrals for the volume of the solid formed by rotating the region $R$ around the line $x = 0$ (i.e. the $y$-axis). Do not evaluate your integral(s).

Answer: ________________________________

b. [5 points] Find an expression involving one or more integrals for the volume of the solid formed by rotating the region $R$ around the line $y = 4$. Do not evaluate your integral(s).

Answer: ________________________________

c. [5 points] Find an expression involving one or more integrals for the volume of the solid which has the region $R$ as its base, and which has square cross-sections perpendicular to the $y$-axis. Do not evaluate your integral(s).

Answer: ________________________________