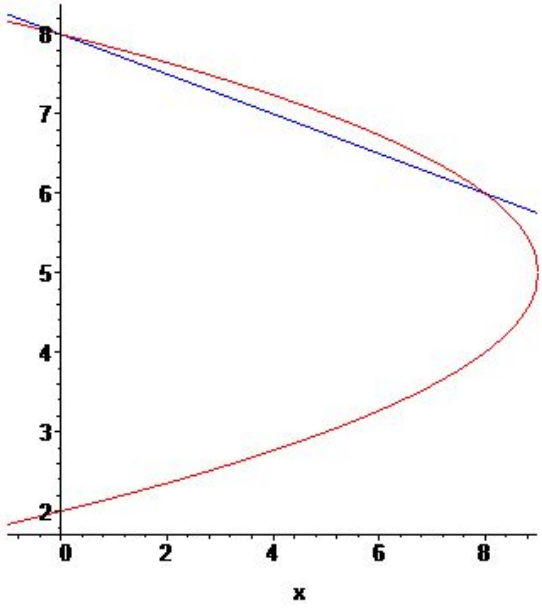
Q-1) Let R be the region in the plane bounded by the curves $y^2 - 10y + x = -16$ and $x + 4y = 32$. Sketch this region and write the limits of integration for the area of this region into the given boxes.
(Grading: sketch=4 points, each correctly filled box=2 points.)

$$\int_{\square}^{\square}\int_{\square}^{\square} dx\ dy = \int_{\square}^{\square}\int_{\square}^{\square} dy\ dx.$$



$y^2 - 10y + x = -16$ is the red parabola, and $x + 4y = 32$ is the blue line. They intersect at the points $(0, 8)$ and $(8, 6)$. The area between these is given by the following integrals.

$$\int_6^8 \int_{32-4y}^{10y-y^2-16} dx\ dy = \int_0^8 \int_{-(x/4)+8}^{5+\sqrt{9-x}} dy\ dx = \frac{4}{3}.$$