Double Integrals over General Regions

1. Evaluate the integral
$$\int_0^2 \int_y^{2y} xy \, dx \, dy$$

2. Evaluate the integral
$$\int_D x \, dA,$$
where A is the region bounded by $y = \ln x$, $x = e$, and $y = 0$.

3. Evaluate
$$\int_D 1 \, dA,$$
where D is the circle with radius 1.