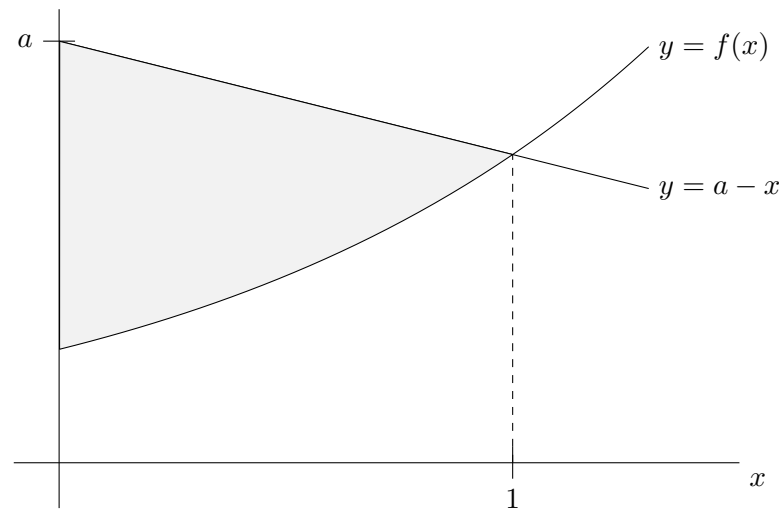**6**. [7 points] A thin plate has the shape bounded by the curves $y = f(x)$, $y = a - x$ and the y-axis, for some positive constant a. The plate has a density of $\delta(x) = 7 + x$ kg/m^2.

a. [4 points] Write an expression involving integrals that represents the total mass of the plate. Do not evaluate any integrals.

b. [3 points] Write an expression involving integrals that represents the x-coordinate of the center of mass of the plate. Do not evaluate any integrals.