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 $\delta(x) = 7 + x \text{ kg/m}^2$.

**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.