5. First, we imagine that the small square piece (of mass m) that was cut from the large plate is returned to it so that the large plate is again a complete $6\,\mathrm{m} \times 6\,\mathrm{m}$ square plate (which has its center of mass at the origin). Then we "add" a square piece of "negative mass" $(-m)$ at the appropriate location to obtain what is shown in Fig. 9-24. If the mass of the whole plate is M, then the mass of the small square piece cut from it is obtained from a simple ratio of areas:

$$m = \left(\frac{2.0\,\mathrm{m}}{6.0\,\mathrm{m}}\right)^2 M \implies M = 9m \ .$$

(a) The x coordinate of the small square piece is $x = 2.0\,\mathrm{m}$ (the middle of that square "gap" in the figure). Thus the x coordinate of the center of mass of the remaining piece is

$$x_{\mathrm{com}} = \frac{(-m)x}{M + (-m)} = \frac{-m(2.0\,\mathrm{m})}{9m - m} = -0.25\ \mathrm{m}\ .$$

(b) Since the y coordinate of the small square piece is zero, we have $y_{\mathrm{com}} = 0$.