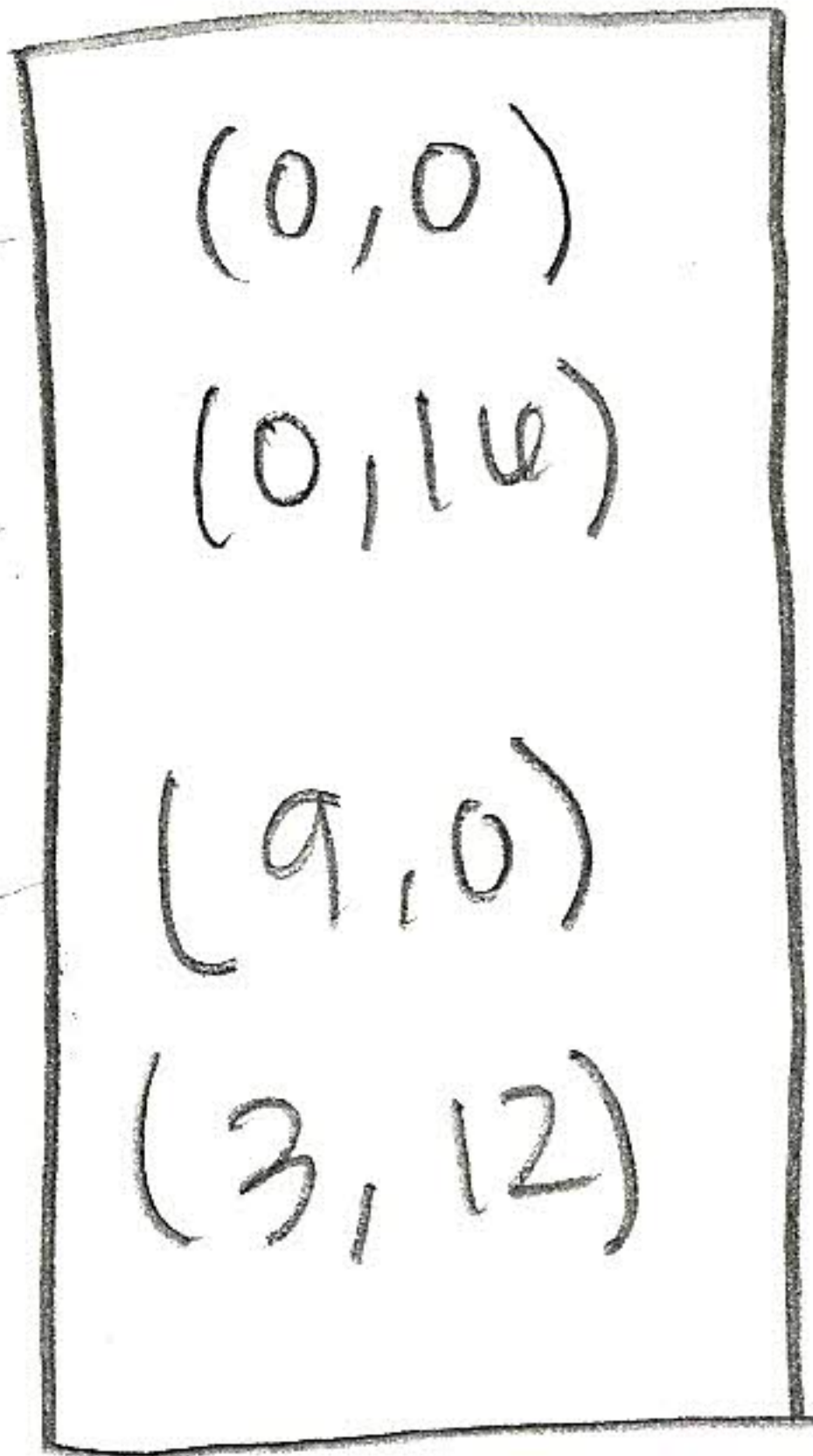


6. The above graph is called the feasible region. Any (x, y) point in the region corresponds to a possible number of computer desks and bookcases that can be manufactured in a week. However, the values that will maximize the profit occur at one of the vertices or corners of the region. Your region should have four corners. Find the coordinates of the ordered pairs of these corners. Be sure to show your work and label the (x, y) coordinates of the corners in your graph.

(x, y)



$$4x + 3y = 48$$

$$48 - 4x = 3y$$

$$y = \frac{48}{3} - \frac{4}{3}x$$

$$4x + 3y \leq 48$$

$$4\frac{48}{3} - 4\frac{4}{3}x = 18 - 2x$$

$$48 - 4x = 54 - 6x$$

$$\frac{2x}{2} = \frac{6}{2}$$

$$x = 3$$

$$4x + 2y = 36$$

$$2y = 36 - 4x$$

$$y = 18 - 2x$$

$$4(3) + 3y = 48$$

$$12 + 3y = 48 - 12$$

$$\frac{3y}{3} = \frac{36}{3} = 12$$

$$y = 12$$

7. To find which values will maximize the profit, plug the values from each of the corners into the objective function, P. Show your work.

$$56(0) + 38(0) = \$0$$

$$56(0) + 38(12) = \$608$$

$$56(9) + 38(0) = \$504$$

$$56(3) + 38(12) = \$624 = \text{maximum profit}$$

$$56x + 38y = P$$