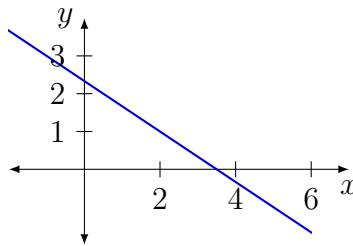**1a.** We get $3x = 9$, and then $x = 3$.

**1b.** Multiply by 15 to get $5y + 60 = 6y - 90$, and then $y = 150$.

2. Let x be total sales, so we obtain the equation $400 + 0.07x = 790$. The solution to this equation, rounded to the nearest penny, is $5571.43.

3. If w is the width, then $w + 3$ is the length, and we get $2w + 2(w + 3) = 54$. Solution is $w = 12$, so the perimeter will be 12 feet by 15 feet.
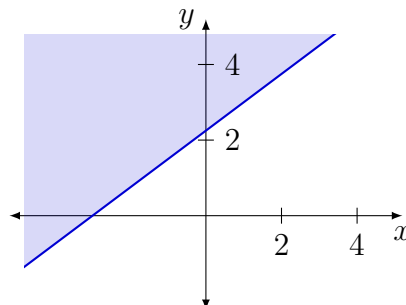
4. Three worthy points are $(2, 1)$, $(5, -1)$, $(-1, 3)$.

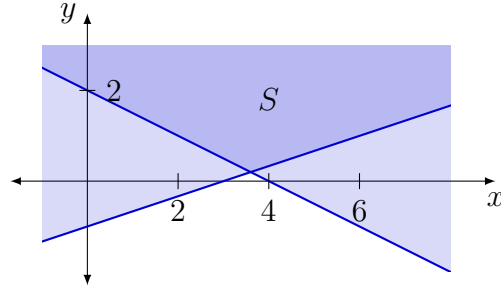**5.** Draw $x = 3$ as a dashed vertical line and shade to the left.
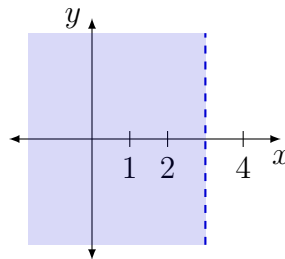
6. Solving for y gives $y \geq \frac{3}{4}x + \frac{9}{4}$. Graph the line $y = \frac{3}{4}x + \frac{9}{4}$ solidly and shade above.

7. Solving for y gives

$$\begin{cases} y \geq \frac{1}{3}x - 1 \\ y \geq -\frac{1}{2}x + 2 \end{cases}$$

so graph $y = \frac{1}{3}x - 1$ and $y = -\frac{1}{2}x + 2$ as solid lines and shade above. The solution set S will consist of the points located where the shadings overlap.

8. Solving for y gives

$$\begin{cases} y \leq 4 \\ y > x - 1 \end{cases}$$

so graph $y = 4$ as a solid line and shade below, and graph $y = x - 1$ as a dashed line and shade above. The solution set S will consist of the points located where the shadings overlap.