Solve the following linear programs. **Clearly show all your work!**

1. Find the maximum and minimum values of $P = 2x + 5y$

   Subject to:
   $$\begin{array}{rcl} 2x + 5y & \leq & 20 \\ x & \geq & 1 \\ 5x + 2y & \leq & 20 \\ y & \geq & 0 \end{array}$$

2. Find the maximum and minimum values of $F = 5x + 6y$

   Subject to:
   $$\begin{array}{rcl} 3x + 5y & \geq & 15 \\ 6x + 3y & \leq & 18 \\ y & \leq & 4 \\ x & \geq & 0 \end{array}$$

3. Find the minimum value of $C = 10x + 15y$

   Subject to:
   $$\begin{array}{rcl} x + y & \leq & 10 \\ 3x + y & \geq & 12 \\ -2x + 3y & \geq & 3 \\ x & \geq & 0 \\ y & \geq & 0 \end{array}$$

4. Find the maximum and minimum values of $P = 4x + 3y$

   Subject to:
   $$\begin{array}{rcl} 3x + 5y & \geq & 20 \\ 3x + y & \leq & 16 \\ -2x + y & \leq & 1 \\ x & \geq & 0 \\ y & \geq & 0 \end{array}$$

5. Find the maximum value of $P = -18x + 9y$

   Subject to:
   $$\begin{array}{rcl} 2x + 3y & \leq & 12 \\ 5x - 6y & \geq & 0 \\ x & \leq & 4 \\ y & \geq & 0 \end{array}$$