Place **ANSWERS ONLY** in the boxes.

1) Given the function \( F(x, y) = -5x^2 + 4xy - y^2 + 16x + 10 \)

   a) Find the stationary (critical) point 

   b) Does \( F \) have a **max, min, or saddle point** at the point from part a?

   c) Evaluate \( F(x, y) \) at the point from part a.

2) Find all stationary points \( F(x, y) = 2x^3 - 6xy + 2y^3 - 1 \). In the chart below, list the critical points in the left column, then classify each of them in the middle column, and then find the value of \( F \) at the stationary point (right column). You may not need all of the rows.

<table>
<thead>
<tr>
<th>Stat. Pt.</th>
<th>Max, Min, or Saddle Pt.</th>
<th>( F(x, y) )</th>
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3) Given \( F(x, y) = 25 - x - 2x^2 - 2y^2 \) over the region \( S = \{(x, y) | x^2 + y^2 \leq 16\} \)

   a) The maximum value is __________ and it occurs at the point __________

   b) The minimum value is __________ and it occurs at the point __________

4) Given \( F(x, y) = x^2y + 3xy - 4y + 15x \) over the region \( S = \{(x, y) | 0 \leq x \leq 3 \text{ and } -4 \leq y \leq 4\} \)

   a) The maximum value is __________ and it occurs at the point __________

   b) The minimum value is __________ and it occurs at the point __________