1'(5). Suppose the constraint matrix \( A \) is 
\[
\begin{bmatrix}
2 & 1 & 1 & 6 \\
1 & 0 & 0 & 1 \\
1 & 1 & 0 & 4
\end{bmatrix}
\] 
and the constant vector \( b \) is \( \begin{bmatrix} 5 \\ 0 \\ 3 \end{bmatrix} \).

Classify the following possible solutions of \( AX = b \) and \( X \geq 0 \). Circle the one best, most specific, answer.

\[
\begin{align*}
\langle 0; 3; 0; 5; 6 \rangle & : \text{none, feasible, solution, basic solution, feasible solution, basic feasible solution} \\
\langle 0; 2; 1; 0; 0 \rangle & : \text{none, feasible, solution, basic solution, feasible solution, basic feasible solution} \\
\langle -1; 2; 2; 1; 0 \rangle & : \text{none, feasible, solution, basic solution, feasible solution, basic feasible solution} \\
\langle 2; 2; 3; -1; 0 \rangle & : \text{none, feasible, solution, basic solution, feasible solution, basic feasible solution} \\
\langle 1; 2; 0; -1; 0 \rangle & : \text{none, feasible, solution, basic solution, feasible solution, basic feasible solution}
\end{align*}
\]

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\textbf{Maximize} \( p = 7.50(ah+ch+sh+ih) + \) 

Simplified, this becomes -

\( p = .3ah + 3.15ch + \) 

\textbf{Constraints} (6 inequalities, 4 equalities)

1: \( ah + al \leq 800 \)  
2: \( ch + cl \leq 600 \)  
3: \( \)  
4: \( \)  
5: \( (5ah + 6.5ch + 4sh + 18ih)/(ah+ch+sh+ih) = 7 \) (multiplied out this gives \( 5ah+6.5ch+4sh+18ih=7(ah+ch+sh+ih) \))  

simplified \( -2ah - .5ch - 3sh + 11ih = 0 \)  

6: \( \)  

simplified \( \)  

7: \( \)  

simplified \( \)  

8: \( \)  

simplified \( \)  

9: \( ah + ch + sh + ih = \) 

10: \( ah, ch, sh, ih, al, cl, sl, il \geq 0 \)  

\textbf{Solution.} \( ah \) has been done for you, I've filled in the decimal parts of \( al, cl, sl, il \) (if you think one is wrong, cross it out). You must fill in the integer parts.

<table>
<thead>
<tr>
<th>Variables</th>
<th>( ah )</th>
<th>( al )</th>
<th>( ch )</th>
<th>( cl )</th>
<th>( sh )</th>
<th>( sl )</th>
<th>( ih )</th>
<th>( il )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ah )</td>
<td>565.297</td>
<td>.425</td>
<td>.219</td>
<td>.781</td>
<td>.759</td>
<td>.725</td>
<td>.795</td>
<td></td>
</tr>
<tr>
<td>( Objective )</td>
<td>( p ) =</td>
<td>.587</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>