Problem 3.3(a): 10 points
Problem 3.3(b): 10 points
Problem 3.3(c): 10 points

Preparation: Read or review Chapter 3 of the textbook.

- **Loudon, “Compiler Construction”** - see section 3.2.3 “Derivations and the language defined by a grammar”, focusing on the portions about leftmost and rightmost derivations (pages 100-116).

### 3.3 Given the grammar

\[
\begin{align*}
\text{exp} & \rightarrow \text{exp} \text{ addop} \text{ term} \mid \text{term} \\
\text{addop} & \rightarrow + \mid - \\
\text{term} & \rightarrow \text{term} \text{ mulop} \text{ factor} \mid \text{factor} \\
\text{mulop} & \rightarrow * \\
\text{factor} & \rightarrow ( \text{exp} ) \mid \text{number}
\end{align*}
\]

Write the complete **leftmost** and **rightmost** derivation sequence for each of the following expressions:

a. 3+4*5−6   

b. 3*(4−5+6)  

c. 3−(4+5*6)