6. [9 points] Clementine wants to make some strawberry jam and sell it to the people in their community. The cost for Clementine to produce q jars of jam is given by the function

$$C(q) = 12\sqrt{q+1} + 3q - 2.$$

Clementine can produce up to 35 jars of jam. Clementine can sell the first 24 jars for \$6. After that, they will sell the remaining jars to their friends for \$3. The revenue is a **continuous** function given by

$$R(q) = \begin{cases} 6q & 0 \le q \le 24 \\ 3(q-24) + 144 & 24 < q \le 35 \end{cases}$$

a. [1 point] What is Clementine's fixed cost, in dollars?

Answer: _____

b. [4 points] For what quantities of jars of jam sold would Clementine's marginal cost equal their marginal revenue? Write NONE if there are no such quantities.

Answer: _____

c. [4 points] How many jars of jam should Clementine make to maximize their profit, and what would their maximum profit be? **Be sure you show enough evidence** and support your conclusions using calculus.

Answer: Number of jars of jam: _____ Maximum profit: _____