You have a 8 inch by 15 inch rectangle of cardboard. You cut out congruent squares from each corner and then fold up the sides to form a box with open top. Find the size of the squares \( x \) which should be cut out to give a box of largest volume. Prove your answer.

Picture(0):

\[
\begin{array}{ccc}
\text{x} & 15-2x & \text{x} \\
\text{x} & 8-2x & \text{x} \\
\end{array}
\]

\( V = \text{vol. max.} \)

Given and one variable(3): Just one equation. When expanded, the right side has 13 symbols, checksum=22.

Domain(0): Allow degenerate boxes with 0 volume. The smallest \( x \) can be is 0, the largest is when \( 2x = 8 \) with \( x = 4 \)
\( x \in [0, 4] \)

Diff(1). Find the derivative. 12 symbols, checksum=19.

Critical points(3): Find the three critical points.
endpoints: \( x = 0, 4 \)
\( V' \) d.n.e. never.

\( V'' = 0 \): Delete the solution which is not in the domain. The remaining solution has 3 symbols, checksum=8.

The three critical points are:

Answer(1): Answer in English with units but no introduced variables.

Proof(3): Use the first or second derivative test or list the values.