Bellwork Hon Alg 2 Polynomial Application Problem Thursday, February 2, 2017

You have a 24" x 16" flat sheet of metal. You are going to cut squares of equal size from each corner of the sheet of metal then fold up the sides to create a box without a top. Your goal to create a box with a maximum volume. Write an equation to find the size (dimensions) of square that you should cut out of each corner in order to have the maximum volume. Remember, $Volume = (l)(w)(h)$

Labeled drawings of the situation:

2-D representation of the flat sheet of metal:

Equation:

3-D representation of the box:

Round to the nearest hundredth.

Size of square that gives maximum volume =

Maximum Volume =

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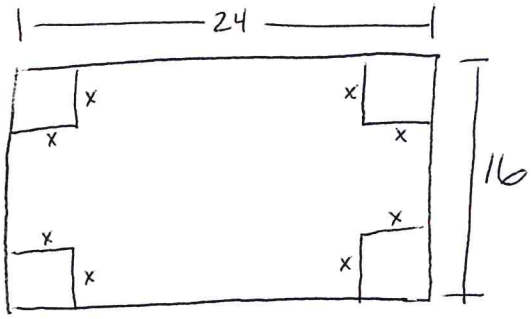
2-D representation of the flat sheet of metal:

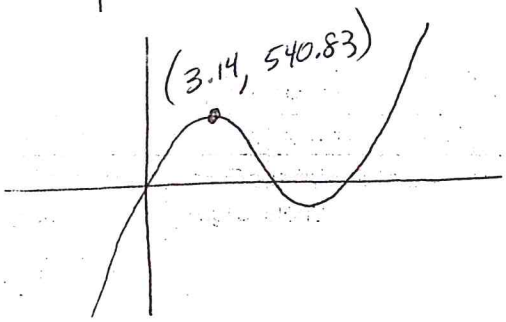


Equation:

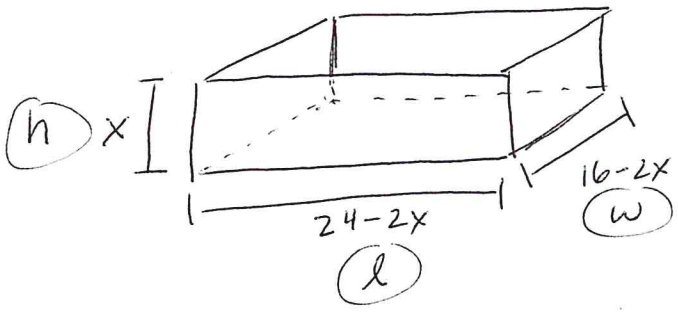
$V = l \cdot w \cdot h$

$V = x(24-2x)(16-2x)$

Graph to find max:



3-D representation of the box:



Round to the nearest hundredth.

Size of square that gives maximum volume = 3.14 in

Maximum Volume = 540.83 in^3