Better Roof

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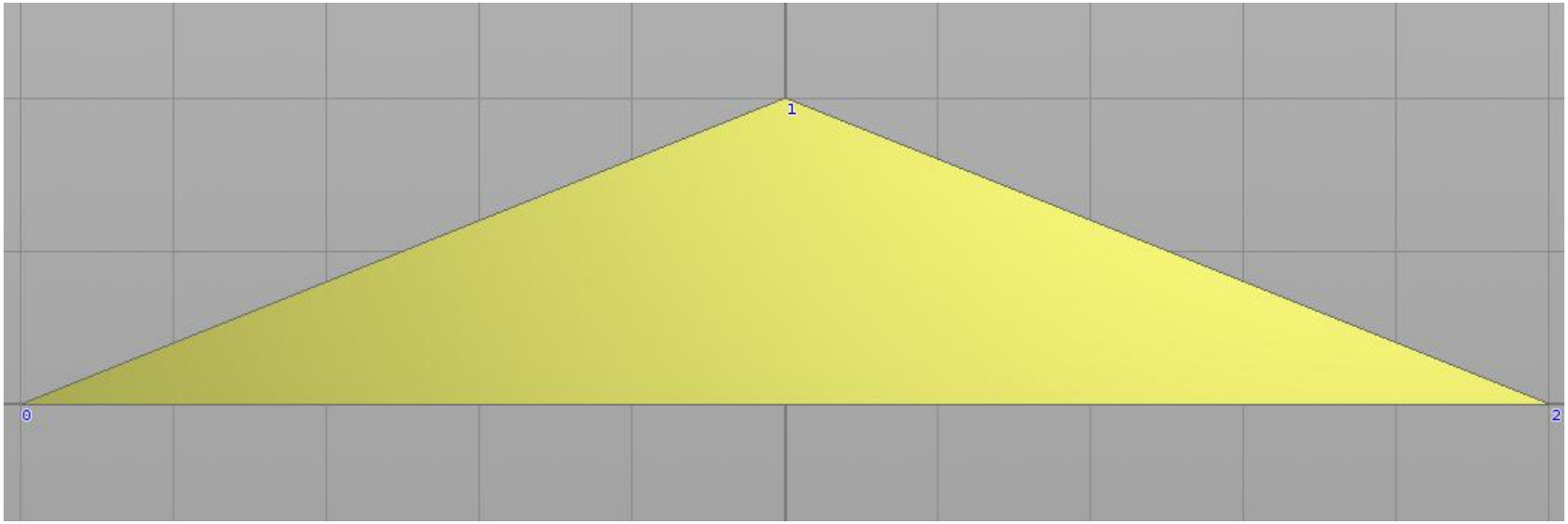
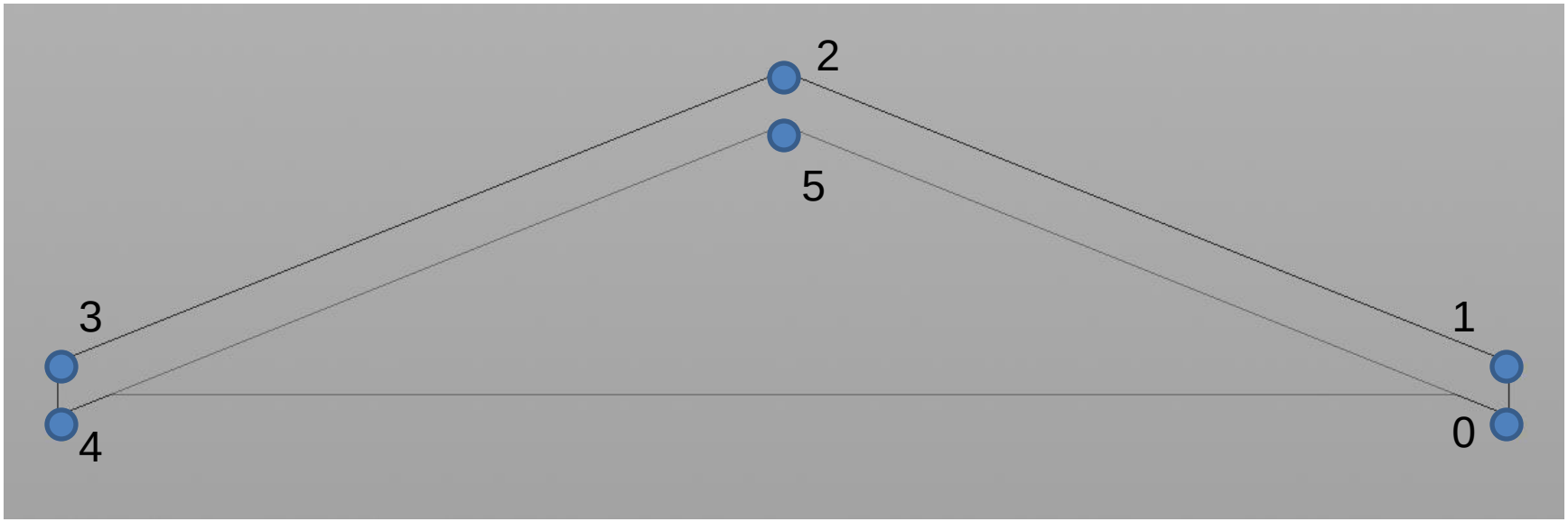
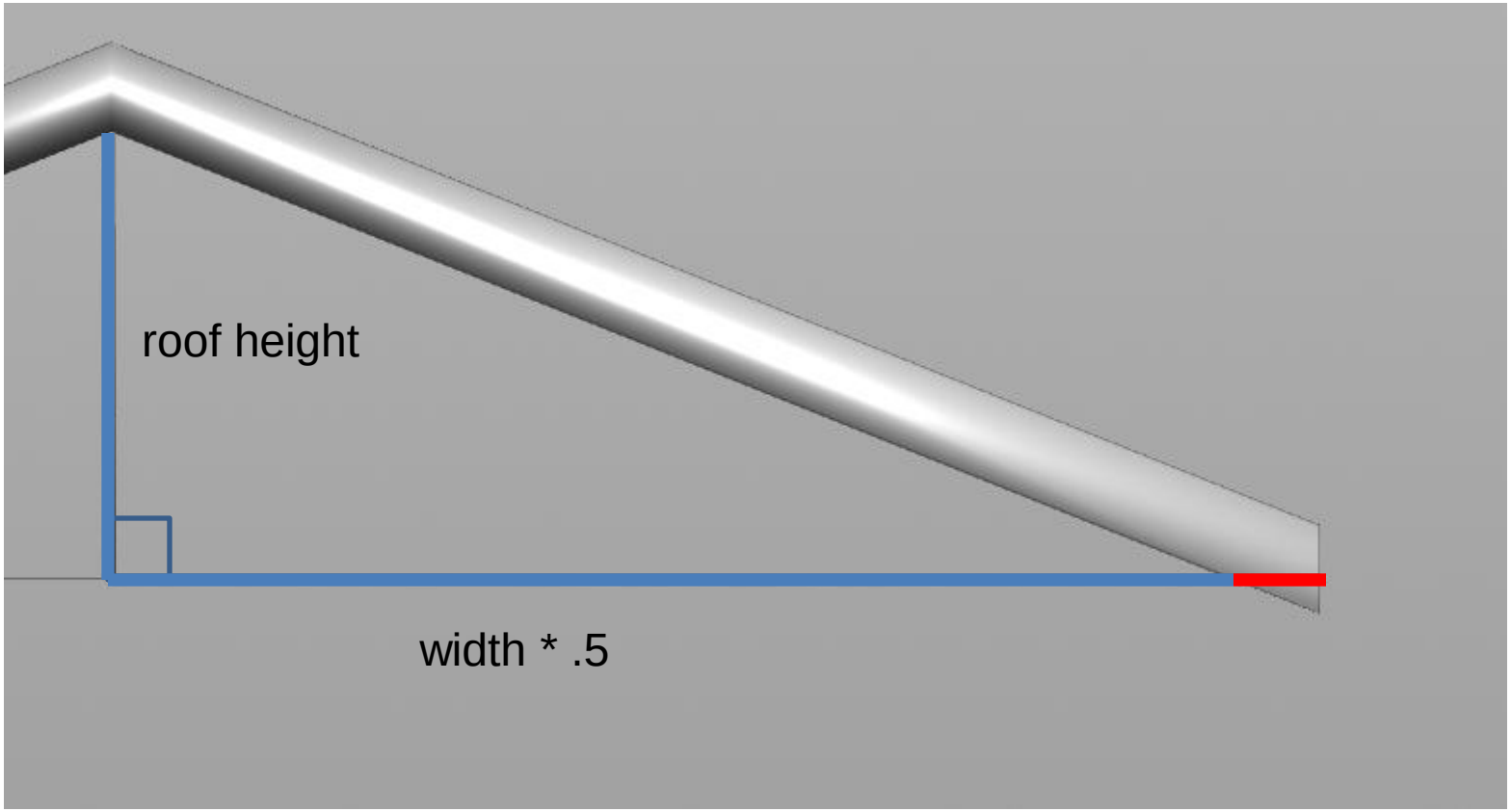
Suppose we want to create a roof that slightly extends past the face on the edge?



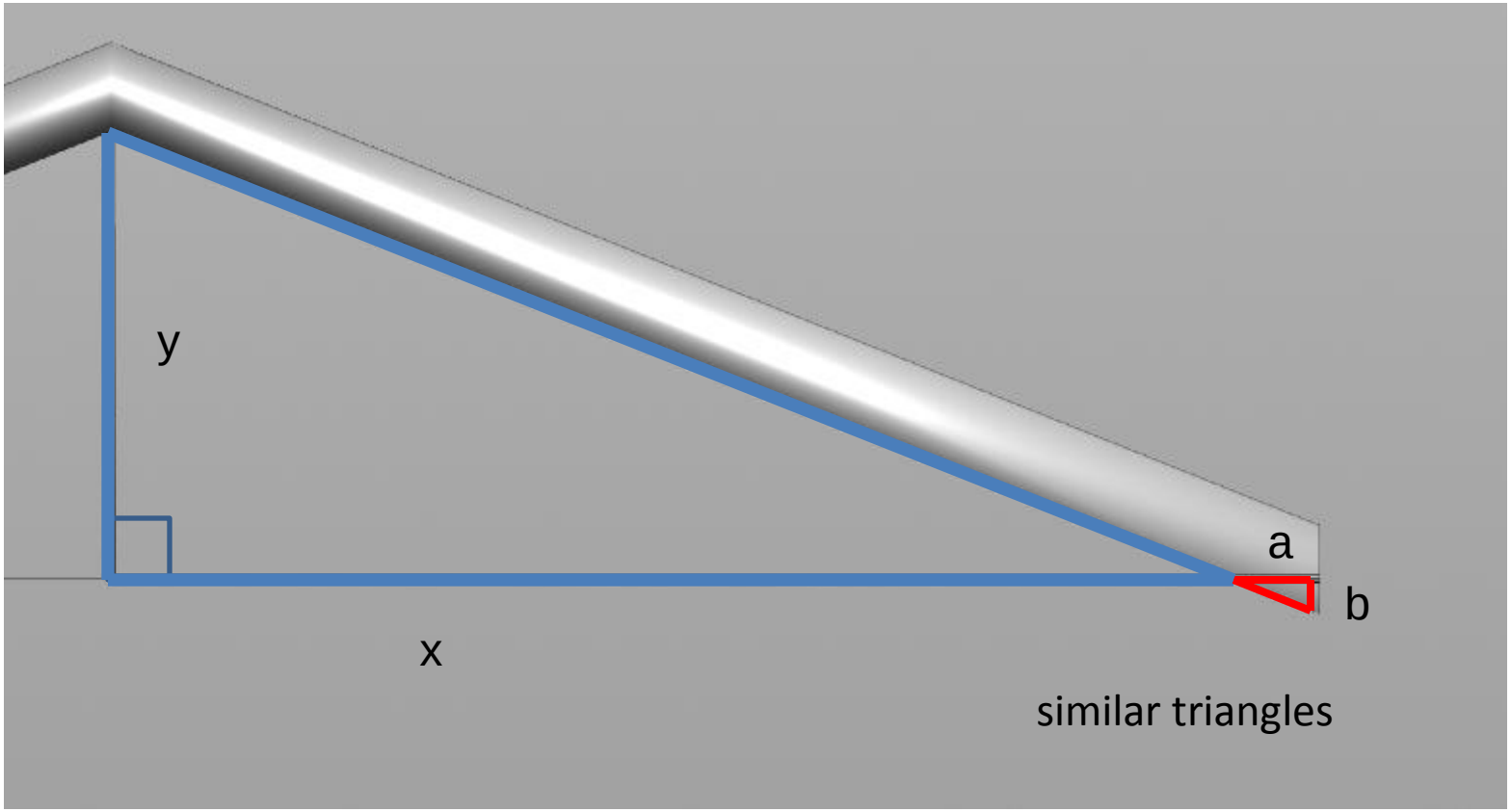
In Houdini we will use the add node to create points and a polygon (by adding a * in the polygon tab) using the following points …



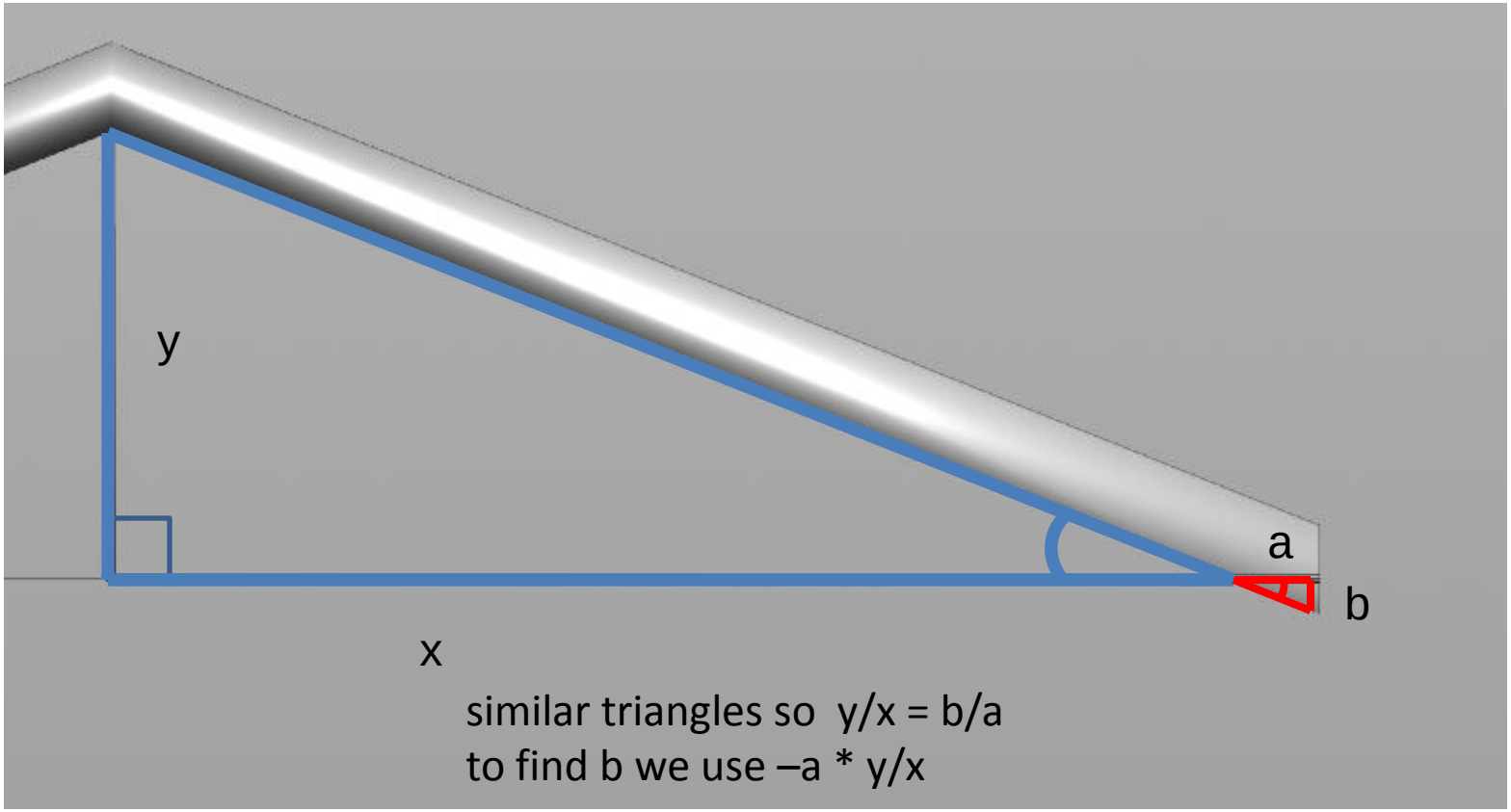
If we extend a little past the edge by come distance (red) …



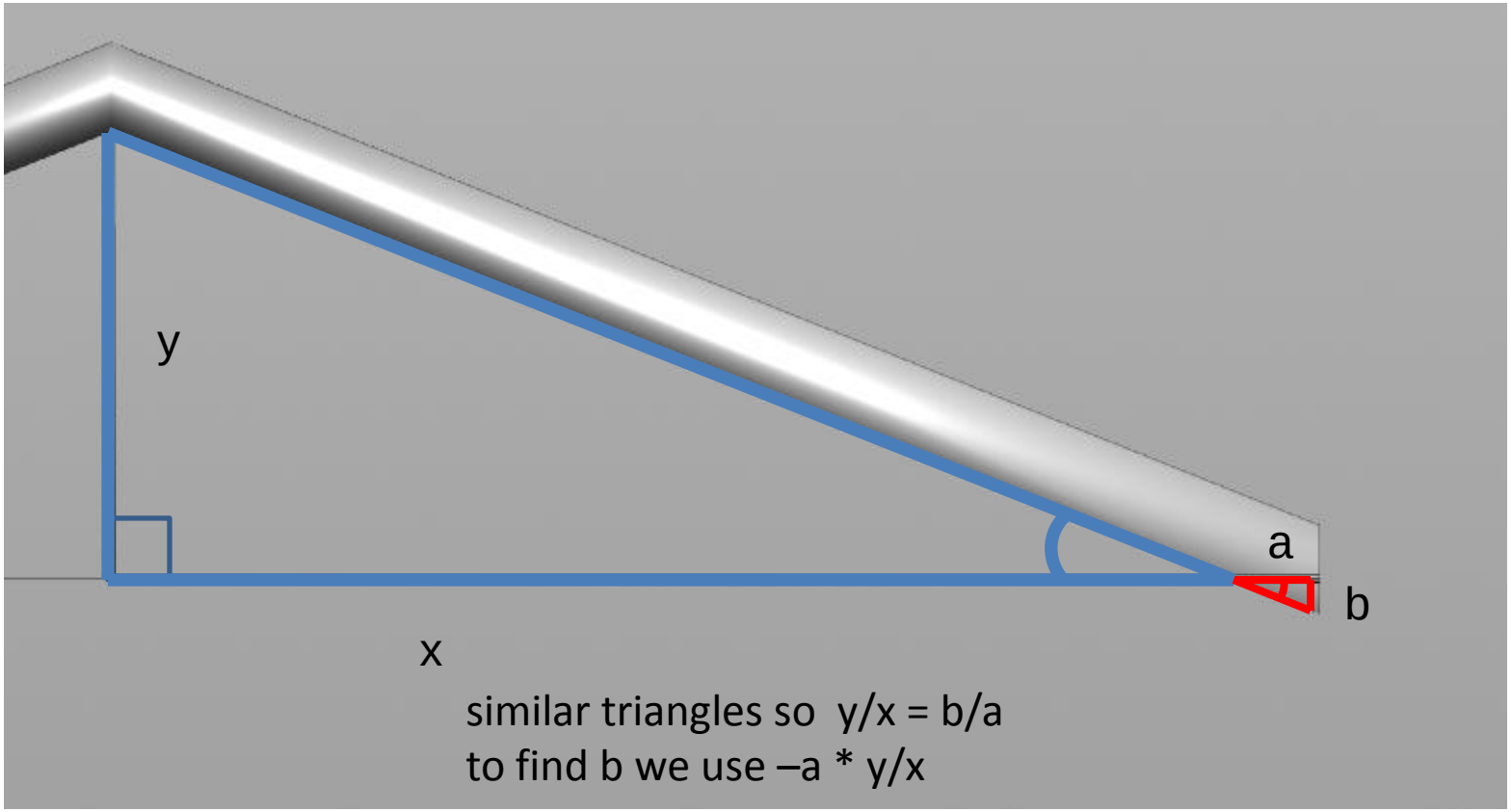
We have the resulting similar triangles (blue and red)



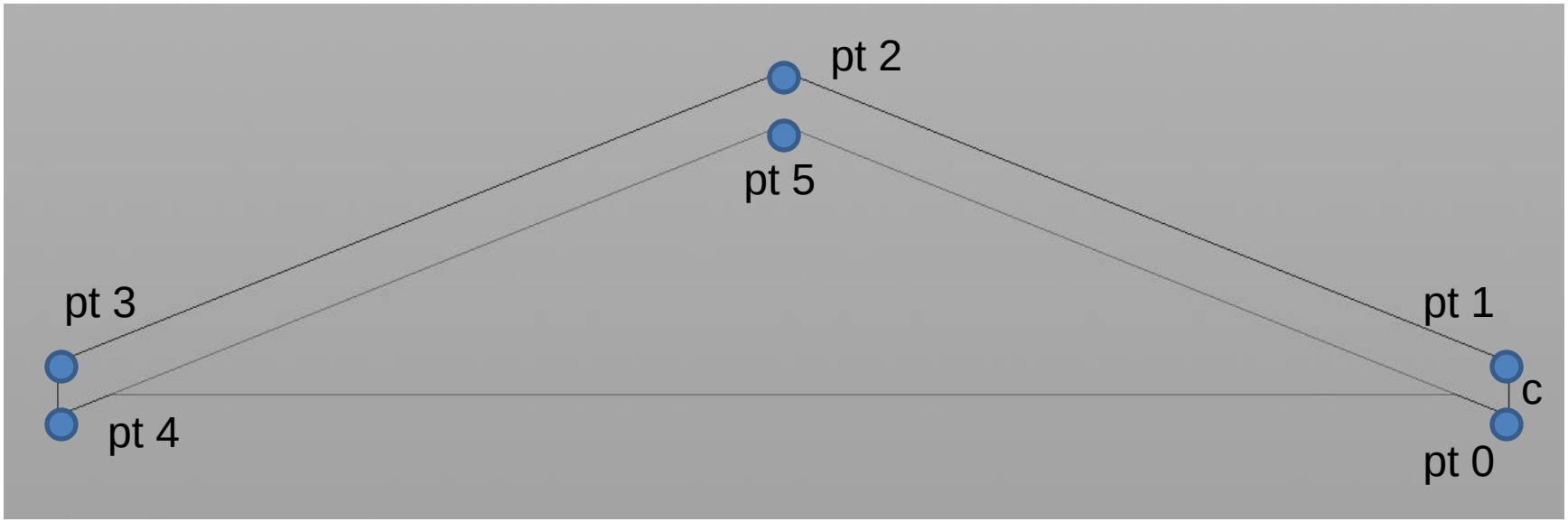
With this information we are going to compute the x and y cartesian coordinates of the points we need …



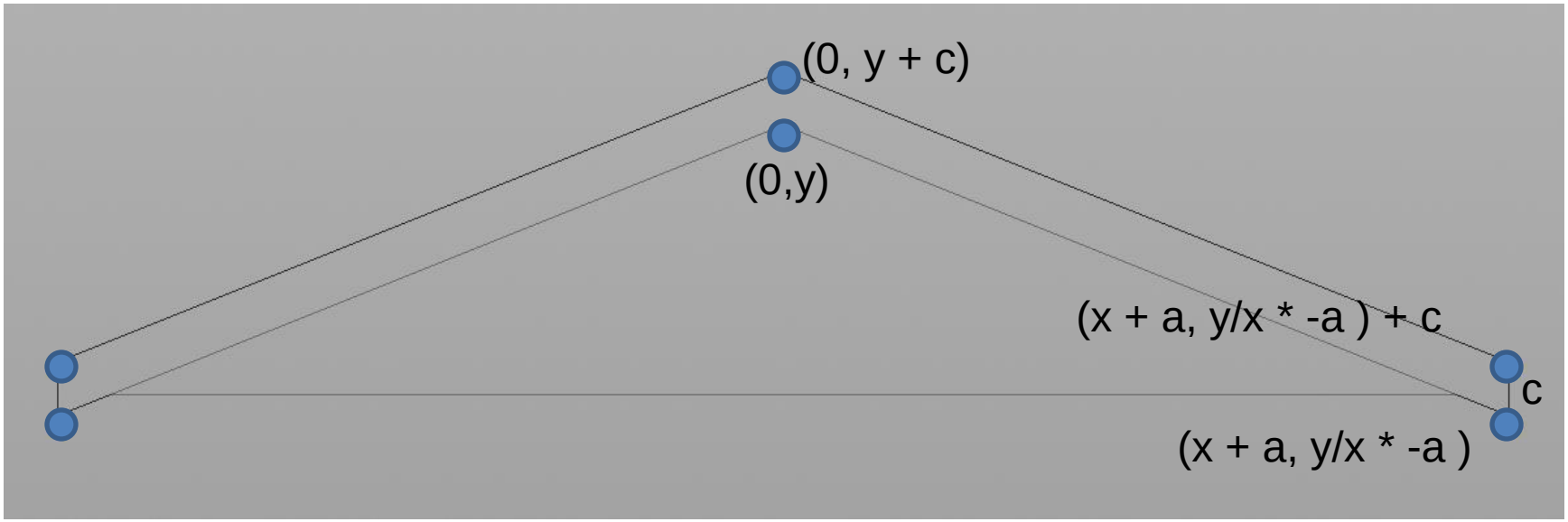
For example, the first point will have coordinate (x + a, -a * y/x)
…



We can put expressions in the add node in houdini to define the points required



The expressions result as follows …



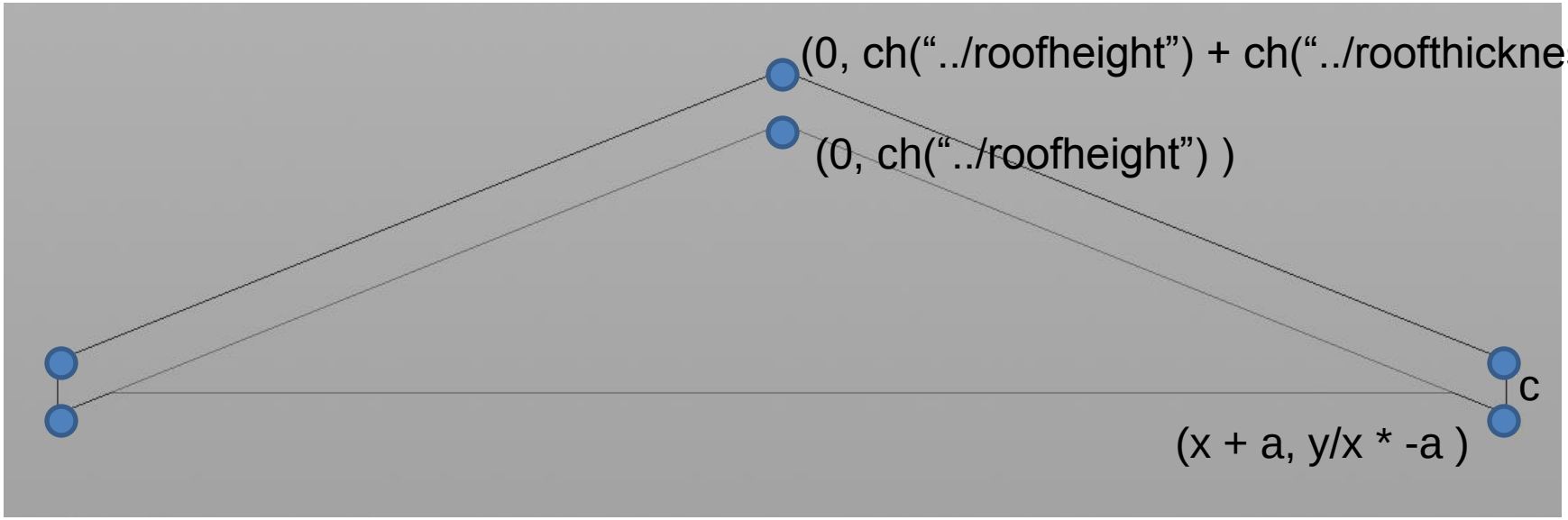
Changing this to have parameters that are consistent with our buildings we can change this to coincide with the hipnc file given

y is the roofheight

x is the width * .5

c is the roofthickness (this actually changes and doesn't measure the actual thickness but allows parameter control)

a is the roofoffset in the x direction



For example, point 0 coordinates become:

(ch("../width") * .5 + ch("../roofoffset"),

ch("../roofheight") / (ch("../width") * .5) * -ch("../roofoffset"))