5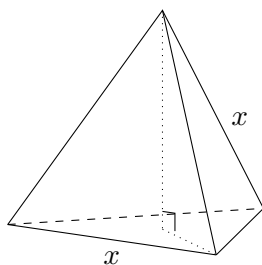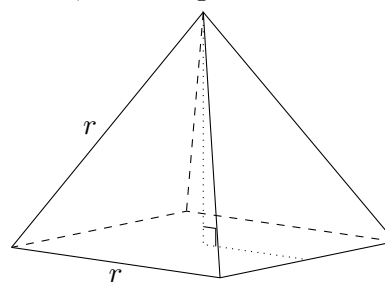. [7 points] An alien is building the wire frames of two pyramids. One has a base that is an equilateral triangle with side length x meters, and the other has a base that is a square with side length r meters. These shapes are shown below. For both, all triangular faces are equilateral.

Triangular Pyramid   Square Pyramid

The alien has 2 meters of wire available to build the frames, and **will use all of it**.

   a. [2 points] Find a formula for r in terms of x.

Answer: $r =$ \rule{6cm}{0.4pt}

   b. [3 points] Find a formula for $A(x)$, the combined surface area of the two pyramids (i.e. the total area of all sides and bases of both shapes). Your formula should be in terms of x only.

Recall that the area of an equilateral triangle with side length L is $\dfrac{\sqrt{3}}{4}L^2$.

Answer: $A(x) =$ \rule{6cm}{0.4pt}

   c. [2 points] The alien wants to actually build one of each type of pyramid. In the context of the problem, what is the domain of the function $A(x)$ from part **b.**? You may give your answer as an interval or using inequalities.

Answer: \rule{6cm}{0.4pt}