Use the six-step problem solving method to solve the following:

1. Find the area of the triangle formed by joining the centers of the tangent circles shown below.

   \[
   \begin{align*}
   d_{\text{large}} &= 25.4 \text{ mm} \\
   d_{\text{medium}} &= 19.05 \text{ mm} \\
   d_{\text{small}} &= 12.7 \text{ mm}
   \end{align*}
   \]

2. Square ABCD has sides that are 8 feet in length. A circle passes through vertices A and D and is tangent to side BC. Find the radius of the circle.