Name: _____ Per: _____

Another look at Half-Angles

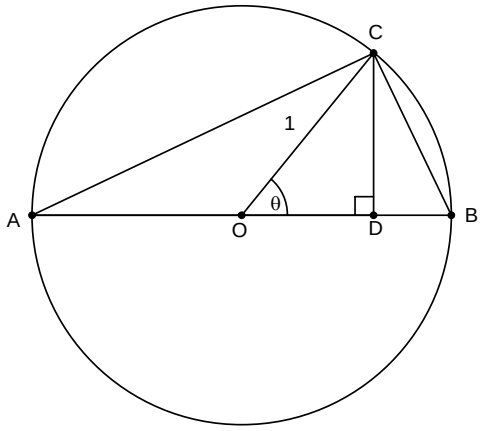
1. You can use the half-angle identities for sine and cosine to write a formula for tan ($x/2$). If you get stuck with an ugly expression, try rationalizing either the numerator or the denominator.

2. Surprise! There's a geometry connection.

First label every segment in the figure at right in terms of θ.

Then label every angle in the figure in terms of θ.

Now use the figure to find *both* formulas for tan θ/2.



3. Rewrite your work from #2 to give a geometric explanation for the same half-angle identity you proved in #1. (In other words, don't do anything new, but just make what you did in #2 comprehensible.)