**Assignment #4**
Due on Friday, 10 November, 2017.

Trisections

1. Consider the following technique for trisecting an angle using a compass and a ruler with two marks that are some fixed distance of r apart:

    Given that $\angle AOB = \theta$, draw a circle with centre O and radius r. Suppose this circle intersects OA at X and the line extending BO past O at Y. Slide the ruler around until its edge runs through X, one mark is on the line extending OY past Y, and the other mark lies on the circle. Let D be the point on the line where the first mark is and E be the point on the circle where the second mark is. Then $\angle EDY = \theta/3$.
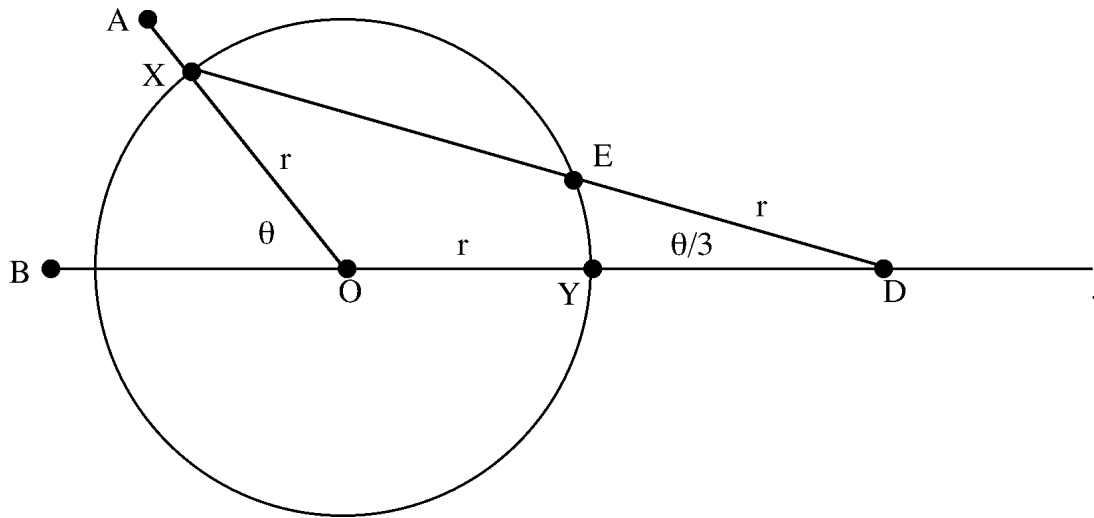
    Prove that this technique works. *[5]*

2. Greek and Hellenistic geometers experimented with various techniques besides to make possible trisections that cannot be accomplished with a compass and unmarked straightedge alone. Describe one such technique (other than the one given above) in detail and explain why it works (or fails). *[5]*