MASSACHUSETTS MATHEMATICS LEAGUE
FEBRUARY 2006
ROUND 5 GEOMETRY: CIRCLES

******* NO CALCULATORS ON THIS ROUND ******

ANSWERS

A)_____

B)_____

C)_____

A) A chord of length 96 cm is 20 cm from the center of the circle.
How far is the midpoint of the chord from the furthest point on the circle?

B) Two chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $AE = 5x - 3$, $CE = 3x - 1$, $BA = 6x - 2$, and $DC = 5x - 1$, find all possible lengths for AE.

C) In the dagram (not to scale) $\overline{PA}$ is tangent to the circle with center O.
$PO = 7\sqrt{7}$, $PD = DE$ and AP = $7\sqrt{6}$. Find the exact area of sector ODE.