MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2010
ROUND 3 COORDINATE GEOMETRY OF LINES AND CIRCLES

ANSWERS

A) _____

B) _____

C) _____

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

A) Points A and B are each equidistant from $P(1, -1)$ and $Q(3, -6)$. If A and B lie on the x-axis and y-axis respectively, determine the slope of $\overline{AB}$.

B) Let P and Q denote the points of intersection between $(x-4)^2+(y+2)^2=20$ and $2x^2+2y^2-9x-13y=0$. Compute PQ.

C) A circle whose center is located in quadrant 1 is tangent to both coordinate axes and passes through the point $A(1, 8)$. The point P on the circle closest to the origin O lies on the line $y=x$. Compute OP.