MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2015
ROUND 3 COORDINATE GEOMETRY OF LINES AND CIRCLES

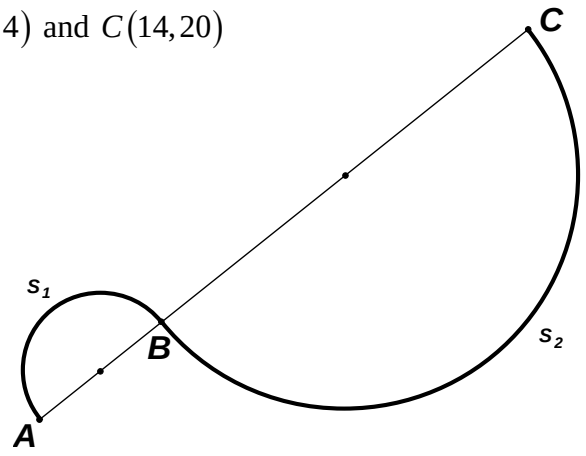
ANSWERS

A) _____

B) (_____ , _____)

C) _____

A) S_1 and S_2 are semi-circles. Compute the distance from *A* to *C*, passing through *B* and moving along the circular arcs, given that $A(2,4)$ and $C(14,20)$ and $AB:BC=1:3$.



B) The perpendicular bisector of the segment connecting $A(-2,-9)$ and $B(8,-5)$ is $ax+2y=k$. Determine the ordered pair (a,k).

C) The point $C(h,k)$ is the center of the circle $x^2+y^2-10x-4y-140=0$. Point $P(a,b)$, where *a* and *b* are positive integers and $a>b$, is in the exterior of the given circle. If *PC* has a minimum value, compute all possible values of $(h+a)^2+(k+b)^2$.