MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 4 – JANUARY 2011
ROUND 1 ANALYTIC GEOMETRY: ANYTHING

ANSWERS

A) _____

B) _____ = 0

C) _____

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

A) Given: $\frac{(x+1)^2}{2}+\frac{(y-3)^2}{4}=1$
Compute the largest possible value of y.

B) Find the equation of the tangent line to the point (3, 2) on the circle $x^2+y^2-8y+3=0$.
Express your answer in simplified $Ax + By + C = 0$ form, where A, B and C are integers and $A > 0$.

C) Let S be the locus of points in the plane that are equidistant from the line $x = 2$ and the point $P(6, 3)$. Compute the coordinates (x, y) of all points of intersection between S and the line whose equation is $2x - 2y - 7 = 0$.

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