MASSACHUSETTS MATHEMATICS LEAGUE
JANUARY 2006
ROUND 1 ANALYTIC GEOMETRY ANYTHING
ANSWERS

A)_____

B)_____

C)_____

A) Find the radius of the circle $x^2 + y^2 + 2(y - x + 3) = 40$.

B) Given two perpendicular lines $\ell_1 : ax + 6y = 3a$ and $\ell_2 : 2ax - 3y + a = 0$ for some constant $a > 0$, find the coordinates of the point of intersection of the two lines.

C) A parabola has $y + 3 = 0$ as its axis of symmetry. The parabola intersects $2x + y = 1$ twice, once at the parabola's vertex and once at the line's y-intercept. Find the coordinates of the parabola's x-intercept.