MASSACHUSETTS MATHEMATICS LEAGUE
MARCH 2006
ROUND 1 ALGEBRA 2: SIMULTANEOUS EQUATIONS & DETERMINANTS
ANSWERS

A)_____

B)_____

C)(_____ , _____)

A) Find x if $\begin{vmatrix} 1 & 1 & 1 \\ x & 2 & x \\ 0 & x & 1 \end{vmatrix} = 5$

B) Find all ordered pairs (x, y) that satisfy this system:

$$\frac{-1}{1-x} = \frac{1}{2y+1}$$
$$(x-1)^2 + (2y+1)^2 = 50$$

C) If A is the sum of the x-coordinates of the ordered pairs (x, y) satisfying:

$$(1+x\sqrt{2})^2(1-x\sqrt{2})^2 = y^2$$
$$3x = y-1$$

and N is the <u>number</u> of ordered pairs satisfying the system, find (A, N).