

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 – MARCH 2014
ROUND 1 ALG 2: SIMULTANEOUS EQUATIONS AND DETERMINANTS

ANSWERS

A) _____

B) (_____ , _____)

C) _____

A) Compute the smaller value of A for which the determinant $\begin{vmatrix} A-2 & 3 \\ 11 & 2A+1 \end{vmatrix}$ is zero.

B) Determine the ordered pair (x, y) for which $\begin{cases} \frac{1}{2x} + \frac{7}{y} = 1 \\ \frac{2}{x} + \frac{4}{y} = 1 \end{cases}$.

C) Find all ordered triples of real numbers (a, b, c) for which $\begin{cases} a^2 + 8b^2 - 12bc = 36 \\ 4ab - 9c^2 = 36 \end{cases}$.