MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 1 - OCTOBER 2014
ROUND 6 ALG 1: EVALUATIONS

ANSWERS

A) _____

B) (_____ , _____)

C) _____

A) Given: $\begin{cases} w = 5 - x \\ x = 6y + 1 \\ y = -\frac{2}{3}z \end{cases}$

Find a simplified expression for z in terms of w.

B) Definition:

$f(x, y) = x + \frac{1}{y}$, that is, the sum of the first argument and the reciprocal of the second argument.

For example, $f(4,2) = 4.5$, $f(2,4) = 2.25$.

If $\frac{f(x,y)}{f(y,x)} = \frac{2}{3}$ and $x - y = 4$, find the ordered pair (x, y).

C) Given: $\bigcirc(x) = 5x - 2$, $\boxed{x} = \frac{x + a}{b}$

If a and b are positive integers, where $a < 10$ and $b < 10$, determine the largest possible value of $a + b$ if $\bigcirc(\boxed{x}) = \boxed{\bigcirc(x)}$.