

**MASSACHUSETTS MATHEMATICS LEAGUE
FEBRUARY 2005
ROUND 1 ALGEBRA 2: ALGEBRAIC FUNCTIONS**

ANSWERS

A) _____

B) _____

C) _____

A) If $f(x) = 4x + 6$ and $f^{-1}(z) = z$ find z .

B) If $f(x) = 1 + f(x - 10)$ for all real x , and if $f(5) = 2$ find $f(2005)$.

C) Given $h(x) = x^3 + 3x + 4.5$, $g(x) = \frac{1}{x} + 3$, and $f(x) = \frac{x+3}{2}$ evaluate
 $g \circ f \circ h \circ h^{-1} \circ g^{-1} \circ f^{-1}(2)$