

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 – FEBRUARY 2011
ROUND 1 ALGEBRA 2: ALGEBRAIC FUNCTIONS**

ANSWERS

A) _____

B) _____

C) _____

******* NO CALCULATORS ON THIS ROUND *******

A) Given: $\begin{cases} f(x) = 4x + 5 \\ g(x) = 6x^2 + x - 4 \end{cases}$

Compute $f^{-1}(3) + g(f(-1))$.

B) Given: $f(x) = 4x - 1$ and $g(t) = 3 - 2t$

Determine all values of a for which $f(g^{-1}(2a)) = g(f^{-1}(2 - a))$.

C) A, B, C and D are the four rational zeros of the function defined by

$$f(x) = 3x^4 - 8x^3 - 11x^2 + 28x - 12.$$

Compute $(1 + A)(1 + B)(1 + C)(1 + D)$.