MASSACHUSETTS MATHEMATICS LEAGUE
MARCH 2005
ROUND 3: ALGEBRA 2 POLYNOMIAL FUNCTIONS
ANSWERS

A)_____

B)_____

C)_____

A) The third degree polynomial function p has a double zero at 2 and a single zero at –3. If its graph has a y-intercept of 6, find the sum of the coefficients of $p(x)$.

B) Give a polynomial equation of minimum degree whose roots are the reciprocals of the roots of $3x^4 + 5x^2 - 6x + 2 = 0$ Express your answer as a simplified fourth degree polynomial with integer coefficients.

C) Give a polynomial equation with integer coefficients and of minimum degree, three of whose root are 0, $1 + i$, and $\frac{1}{2} + \sqrt{2}$. Express your answer in the form $a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x + a_0 = 0$