

MASSACHUSETTS MATHEMATICS LEAGUE

MARCH 2004

ROUND 3: POLYNOMIAL FUNCTIONS

ANSWERS

A) _____

B) _____

C) _____

A) Given $P(x) = 2x^3 - 5x^2 + ax + b$. Calculate the value of $(a + b)$ if $P(-1) = 8$, and the remainder when $P(x)$ is divided by $x - 2$ is -22 .

B) Find all roots of. $2x^4 + 3x^3 - 3x^2 - 5x - 6 = 0$

C) If r , s , and t are the roots of $3x^3 + 7x^2 - 4 = 0$, calculate the value of

$\frac{1}{r-1} + \frac{1}{s-1} + \frac{1}{t-1}$ as a simplified fraction