

**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2011
ROUND 4 ALG 1: ANYTHING**

ANSWERS

A) _____ , _____ , _____ , _____

B) _____

C) _____

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

A) Determine the four integer values of x for which $Q = \frac{10+3x}{6-x}$ is a positive integer.

B) At East Statistics High School, 100 students are in the math club, 120 are in the statistics club and 130 are in the science club. Forty students belong to just the math club, 40 students belong to just the statistics club, and 40 students belong to just the science club. Exactly 12 students belong to all three clubs. If there are 1000 students in this school, how many students belong to none of these clubs?

C) Simplify completely: $\frac{1-4x^{-2}}{8-x^{-3}} \div \frac{x+2}{\frac{4}{x^{-2}} + \frac{2}{x^{-1}} + 1}$

Recall: $x^{-n} = \frac{1}{x^n}$ and $A^3 - B^3 = (A - B)(A^2 + AB + B^2)$

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