

MASSACHUSETTS MATHEMATICS LEAGUE
JANUARY 2004
ROUND 6: ALGEBRA I ANYTHING

ANSWERS

A) 2

B) $(2x+1)/(x+3)$

C) $3, -5$

A) Jeff and his wife Brenda can each weed the garden in four hours. One day after they had worked together weeding for one hour, their son Kyle helped them finish the work in one-half hour. How long would it have taken Kyle to weed the garden by himself?

$$\frac{3/2}{4} + \frac{3/2}{4} + \frac{1/2}{x} = 1$$

$$\frac{3}{2} + \frac{1}{x} = 2$$

$$\frac{3}{4} + \frac{3}{4} + \frac{1}{x} = 2$$

$$\frac{1}{x} = \frac{1}{2}, x = 2 \text{ hours}$$

B) Simplify: $\frac{15x^2 + 11x - 12}{25x^2 - 9} \div \frac{3x^2 + 13x + 12}{10x^2 + 11x + 3}$

$$\frac{(5x-3)(3x+4)}{(5x-3)(5x+3)} \cdot \frac{(5x+3)(2x+1)}{(3x+4)(x+3)} = \frac{2x+1}{x+3}$$

C) Solve for x: $|x-2| + |x+4| = 8$

$$x-2+x+4=8$$

$$2x+2=8$$

$$2x=6$$

$$x=3$$

$$x-2+x+4=-8$$

$$2x+2=-8$$

$$2x=-10$$

$$x=-5$$