ACSL

2016 - 2017 **American Computer Science League** **Contest #2**

Senior Division Solutions

1. Prefix/Infix/Postfix

$\frac{C(A+B)}{A^2} - \frac{BC+A^2}{B+C}$ = (C*(A+B))/A^2 − (B*C + A^2)/(B+C)

= (C*(+AB))/(↑A2) − ((*BC) + (↑A2))/(+BC)

= ((*C+AB)/(↑A2)) − ((+*BC↑A2)/(+BC))

= ((/*C+AB↑A2) − (/+*BC↑A2+BC))

= − / * C + A B ↑ A 2 / + * B C ↑ A 2 + B C

1. As shown

2. Prefix/Infix/Postfix

3 2 2 ↑ @ 1 1 @ + 2 @ 2 2 ↑ @ 2 + 3 1 − @

= 3 (2 2 ↑) @ (1 1 @) + 2 @ (2 2 ↑) @ 2 + (3 1 −) @

= (3 4 @) 1 + 2 @ 4 @ 2 + 2 @ = (3 1 +) 2 @ 4 @ 2 + 2 @

= (4 2 @) 4 @ 2 + 2 @ = (2 4 @) 2 + 2 @ = (2 2 +) 2 @ = 4 2 @ = 2

2. 2

3. Bit-String Flicking

(RCIRC-2 (LSHIFT-1 (LCIRC-2 (RSHIFT-1 10101))))

= (RCIRC-2 (LSHIFT-1 (LCIRC-2 01010)))

= (RCIRC-2 (LSHIFT-1 01001))

= (RCIRC-2 10010)

= 10100

3. 10100

4. Bit-String Flicking

Let X = abcde

LHS = 01011 OR (RCIRC-2 X)

= 01011 OR deabc

= d1a11

RHS = 01111

If d1a11 = 01111, then a = 1, b = *, c = *, d = 0, e = *

So X = 1**0*

4. 1**0*

5. LISP

(CAR (CDR (CAR '((2 (3) (4 5)) (6 (7 8)))))

= (CAR (CDR '((2 (3) (4 5)))))

= (CAR '(((3) (4 5))))

= (3)

5. (3)