

American Computer Science League

2020-2021 • Contest 2: Shorts • Senior Division

1. Prefix-Infix-Postfix Convert this expression from prefix to postfix: $- + A ^ B 2 ^ / * A C + B C 3$	 A. $AB2^{+}A*CBC+/3^{-}$ B. $AB2^{+}AC*BC+/3^{-}$ C. $AB2^{+}AC*BC+/3^{-}$ D. $AB2^{+}AC*BC+/3^{-}$ E. $AB2^{+}AC*BC+/3^{-}$
2. Prefix-Infix-Postfix What is the value of the following prefix expression if $x = -5$ and $y = 2$? $- * 4 ^ x y - * 9 x ^ 6 y$	 A. -181 B. -29 C. 29 D. 157 E. 181
3. Bit-String Flicking Evaluate the following: $((RCIRC-3\ 01110) XOR\ 10111\ AND\ 01111\ OR\ (LSHIFT-2\ 11101))$	 A. 01110 B. 11110 C. 01011 D. 11011 E. 10100
4. Bit-String Flicking Identify the actual 5-character bit string that makes the following expression TRUE using * notation (e.g $0*10*$): $(RSHIFT-1\ ((RCIRC-2\ 01101)\ AND\ X)) = (LCIRC-4\ 00010)$	 A. $*1*1*$ B. $*0*0*$ C. $*0*1*$ D. $***1*$ E. $*0***$
5. LISP Evaluate the following LISP expression: $(CDR\ (CAR\ (CDR\ (CDR\ '(a\ (b\ (c\ d))\ (e\ f\ g))))))$	 A. (e) B. (g) C. (e f) D. (f g) E. (e g)

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<p>1. 前缀-中缀-后缀</p> <p>将下列前缀表达式转换为后缀表达式：</p> $- + A ^ B 2 ^ / * A C + B C 3$	<p>A. $AB2^+A*CBC+/3^-$ B. $AB2^+AC*BC+/3^-$ C. $AB2^+^AC*BC+/3^-$ D. $AB2^+AC*BC+/3^-$ E. $AB2^+AC*BC+/3^-$</p>
<p>2. 前缀-中缀-后缀</p> <p>当 $x = -5$, $y = 2$ 时，下列前缀表达式的值是多少？</p> $- * 4 ^ x y - * 9 x ^ 6 y$	<p>A. -181 B. -29 C. 29 D. 157 E. 181</p>
<p>3. 比特位操作</p> <p>计算以下表达式：</p> $((RCIRC-3\ 01110) XOR\ 10111\ AND\ 01111\ OR\ (LSHIFT-2\ 11101))$	<p>A. 01110 B. 11110 C. 01011 D. 11011 E. 10100</p>
<p>4. 比特位操作</p> <p>计算出含有5个字符的比特串X，使得下面的等式为真，可以使用符号*表示（例如 $0*10*$）：</p> $(RSHIFT-1\ ((RCIRC-2\ 01101)\ AND\ X)) = (LCIRC-4\ 00010)$	<p>A. $*1*1*$ B. $*0*0*$ C. $*0*1*$ D. $***1*$ E. $*0***$</p>
<p>5 . LISP</p> <p>计算下列LISP表达式的值</p> $(CDR\ (CAR\ (CDR\ (CDR\ '(a\ (b\ (c\ d))\ (e\ f\ g))))))$	<p>A. (e) B. (g) C. (e f) D. (f g) E. (e g)</p>