

RPN (Reverse Polish Notation) Worksheet

Name: _____ Date: _____

Solve the following problems using techniques learned last class.

Questions

1. Evaluate an RPN expression

Evaluate:

$$7\ 2\ +\ 3\ 4\ *\ 2\ /\ -$$

Answer: _____

2. Convert to RPN

Convert the algebraic expression $(5 + 3) \times 4 - 6$ to RPN notation.

Answer: _____

3. Convert to algebraic notation

Convert $a\ b\ +\ c\ d\ *\ e\ /\ -$ to standard algebraic notation.

Answer: _____

4. Evaluate an RPN expression

Evaluate:

$$8\ 3\ 2\ *\ +\ 5\ 4\ -\ 6\ *\ 2\ /\ +$$

Answer: _____

5. Convert to RPN

Convert the algebraic expression $((a + b) \times c - d) / (e + f \times g)$ to RPN notation.

Answer: _____

6. Convert to algebraic notation

Convert $x\ y\ z\ *\ +\ w\ v\ u\ *\ -\ /\ t\ +$ to standard algebraic notation.

Answer: _____

7. Evaluate an RPN expression

Use degrees for trigonometric functions. Evaluate:

$$90\ \sin\ 4\ \text{sqrt}\ *\ 16\ 4\ /\ 2\ ^\ +$$

Answer: _____

8. Convert to RPN

Convert the algebraic expression $\sqrt{a^2 + b^2} \cdot \cos \theta$ to RPN notation.

Answer: _____

Challenge 1.

Write the RPN expression 5 4 3 2 1 - - - - in standard infix notation

- a. Using parenthesis
- b. Without parenthesis

In both cases the numbers must appear in the original order but you may use any operands needed

Answer A: _____

Answer B: _____

Challenge 2.

An RPN expression with n operands and only binary operators $+$, $-$, $\times$, $\div$ will have how many operators?

Answer: _____

Challenge 3.

By reordering operators and/or operands, how many RPN expressions are equivalent to 4 3 2 1 + + +?
For example 1 2 3 4 + + + has the same value

Answer: _____

Challenge 4.

Evaluate

1000 999 998 ... 3 2 1 - - - ... - -

Where there are the appropriate number of minus signs, and the three dots indicate missing values.

Answer: _____

Challenge 5.

Evaluate in radians.

1 cos cos cos cos ...

Where there are infinitely many cosines.

Answer: _____