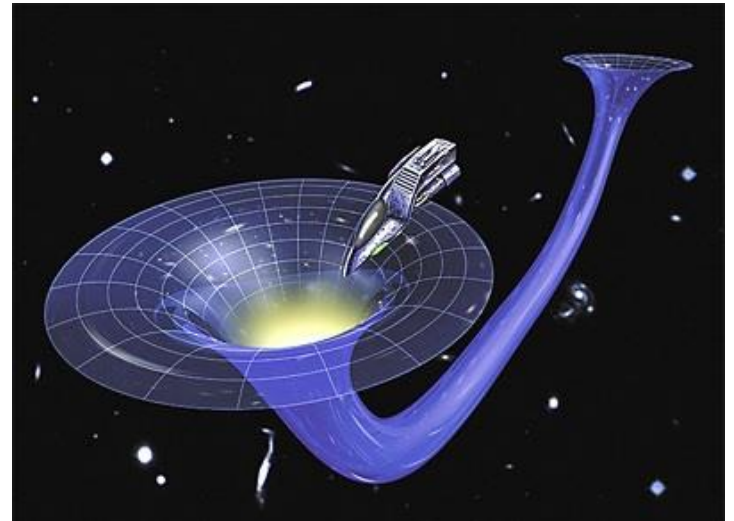# Spaceship Calculator

http://acm.cs.nthu.edu.tw/problem/10838/

Houston, we have had a problem!

- Spaceship accidentally flew into a black hole
  - Time and space distort
  - Even the priority of our familiar arithmetic operators are changed!

http://mail.colonial.net/~hkaiter/Black_holes.htm

- Spaceship cannot find the path back to Earth
  - Space navigation calculator is halting because it adopts Earth's arithmetic priority

Priority Differences

- In the black hole
  - 7/9-8+5*7*1
    = (7/(9-8))+((5*7)*1)
    = 42

- On Earth
  - 7/9-8+5*7*1
    = ((7/9)-8)+((5*7)*1)
    = (0-8)+(35)
    = 27

- Other arithmetic rules are identical between two places

-	the highest
* /	middle
+	the lowest

Input

- Each line is an expression
  - Operands
    - Single digit, 0~9
  - Operators
    - + - * /
  - Parentheses

  - No space characters in an expression

```
7/9-8+5*7*1↵
7+1+8-7-2*5-1/3+2+7/0↵
7*7+3/(9+8) ↵
```

Output

- Please output four lines for each input expression

  1. Original expression
  2. Parenthesized expression
     - Please keep the order of the operands
  3. Evaluation result
  4. Five dashes -----

```
7/9-8+5*7*1 ↵
= (7/(9-8))+((5*7)*1) ↵
= 42 ↵
----- ↵
7+1+8-7-2*5-1/3+2+7/0 ↵
= (((7+1)+((((8-7)-2)*(5-1))/3))+2)+(7/0) ↵
= NaN ↵
----- ↵
7*7+3/(9+8) ↵
= (7*7)+(3/(9+8)) ↵
= 49 ↵
----- ↵
```

single space

Please Note

- Division by zero
  → Output "NaN"
  (i.e., Not a Number)

- Always omit outputting the outermost pair of parenthesis
  - 7*7+3/(9+8)
    = ((7*7)+(3/(9+8)))
    = 49

Do not output these parentheses

```
7/9-8+5*7*1
= (7/(9-8))+((5*7)*1)
= 42
-----
7+1+8-7-2*5-1/3+2+7/0
= (((7+1)+((((8-7)-2)*(5-1))/3))+2)+(7/0)
= NaN
-----
7*7+3/(9+8)
= (7*7)+(3/(9+8))
= 49
-----
```

http://www.zazzle.com/