

$\pi$  Day, March 14, 2024  
Vincent Chan

(1) Get as close as possible to the number 2024 using the digits 3, 1, 4, 1 (in order). You are allowed to use only the following operations (in addition to parentheses):

- Standard operations:  $+$ ,  $-$ ,  $\times$ ,  $\div$
- Square root of a number:  $\sqrt{\square}$
- Exponentiation of two numbers:  $\square^{\square}$
- Radicals:  $\sqrt[n]{\square}$
- Negation of a number:  $-\square$
- Factorial:  $\square!$
- Percentage:  $\square\%$
- Decimal (only with an original digit):  $0.d$
- Repeating decimal (only with an original digit):  $0.\overline{d}$

**Solution:**

$$(3 + 1)! + \sqrt{4} \div .1\%$$