25 Nov '25

If $\frac{1}{y} = 32$, then $y = ?$

$$\frac{1}{y} = 32$$

$$\Rightarrow \frac{1}{y} \times y = 32 \times y$$

$$\Rightarrow 1 = 32 \times y$$

$$\Rightarrow \frac{1}{32} = \frac{32 \times y}{32}$$

$$\Rightarrow \frac{1}{32} = y$$

$$\Rightarrow y = \frac{1}{32}$$

Let $\sqrt[-5]{32} = x$

$\implies x^{-5} = 32$

$\implies \frac{1}{x^5} = 32$

$\implies x^5 = \frac{1}{32}$

$\implies x = \sqrt[5]{\frac{1}{32}}$

So, we can have '$-n$'th roots also only if radicand is $\neq 0$. If it's < 0, sometimes you can have n^{th} roots, depending on 'n'.

Eg: $-2^3 = -2 \times -2 \times -2 = -8$

$\Rightarrow \sqrt[3]{-8} = -2$

But what is $\sqrt{-8} = ?$

If $p < 0$, $\sqrt{p}$ doesn't exist in real numbers

If $\sqrt{p} = x < 0$

$x^2 > 0 \Rightarrow p > 0$

if $\sqrt{p} = x > 0$

$x^2 > 0 \Rightarrow p > 0$

So p can't be $-$ve

→ Binary search / Bisection method for n^{th} root of a number and to find if a number exists in a list.

See AI notes; Python Code

HW: Create a brute force algorithm to check $\sqrt[n]{p}$ upto a precision of ~~0~~.0001 (python)

Eg: $\sqrt[5]{200}$

$2^5 = 32 < 200$; $3^5 = 243 > 200$

So, check each of 2.0001, 2.0002 .... until you find $|x^5 - 200| < 0.0001$

HW: Run several examples in the python code for search & roots.

HW: Try to write all three functions by yourself

(1) Bisection for roots
(2) Binary search (list)
(3) Bruteforce search (list)

→ Jupyter notebooks for sorting

HW: (1) Find out how to show variables in markdown sections
(2) Find how to create tables in markdown
(3) Create a Jupyter ~~notebook~~ combining AI notes + code on bisection for roots + list search