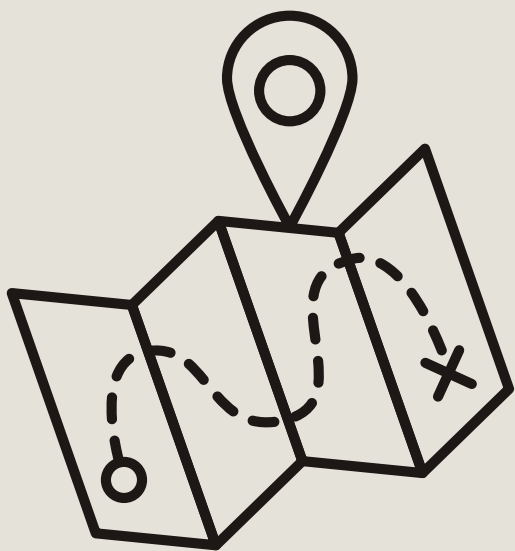# THE BALLAD OF THE BROKEN SUM
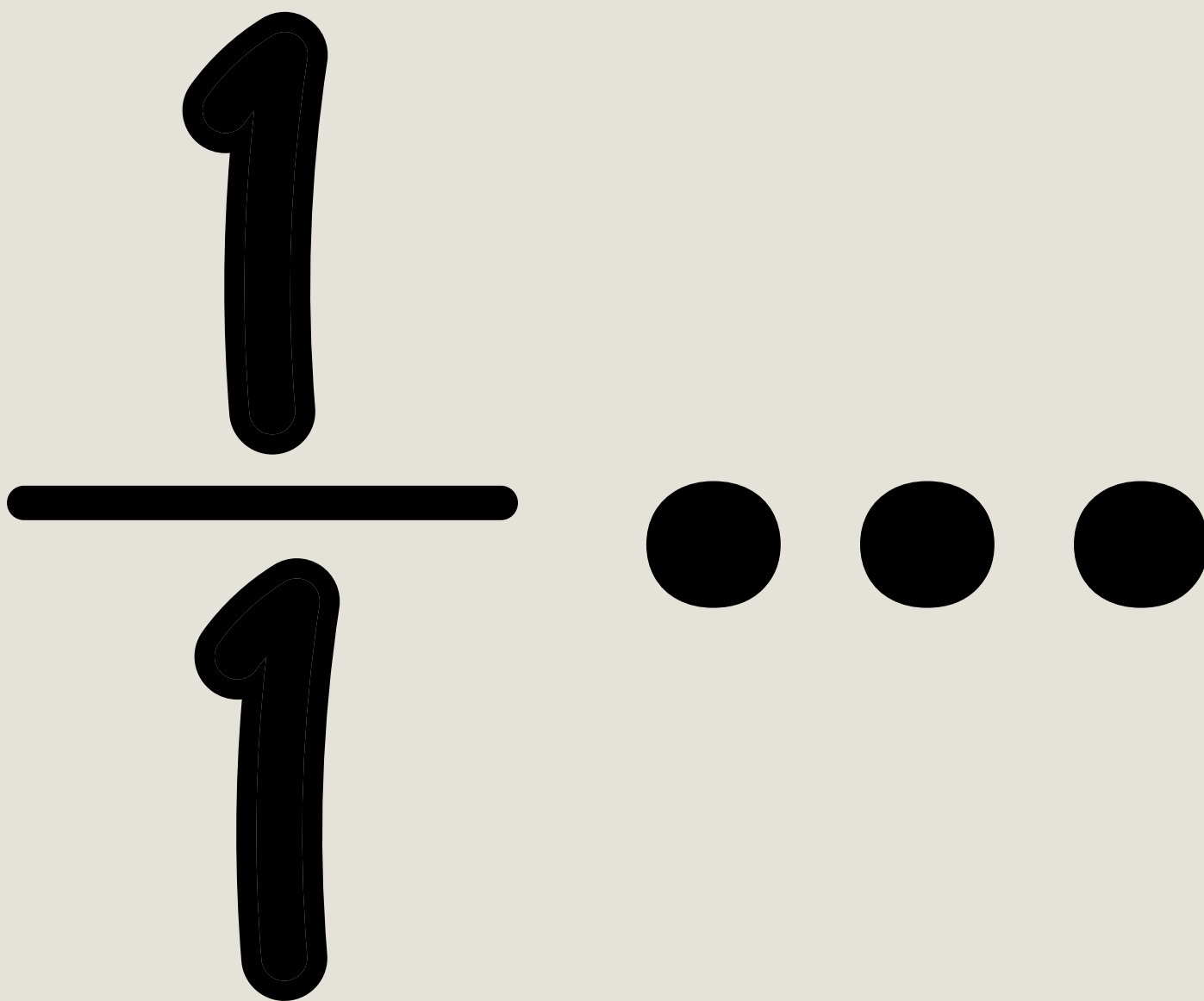
A poetic yet comical tragedy of the Harmonic Series
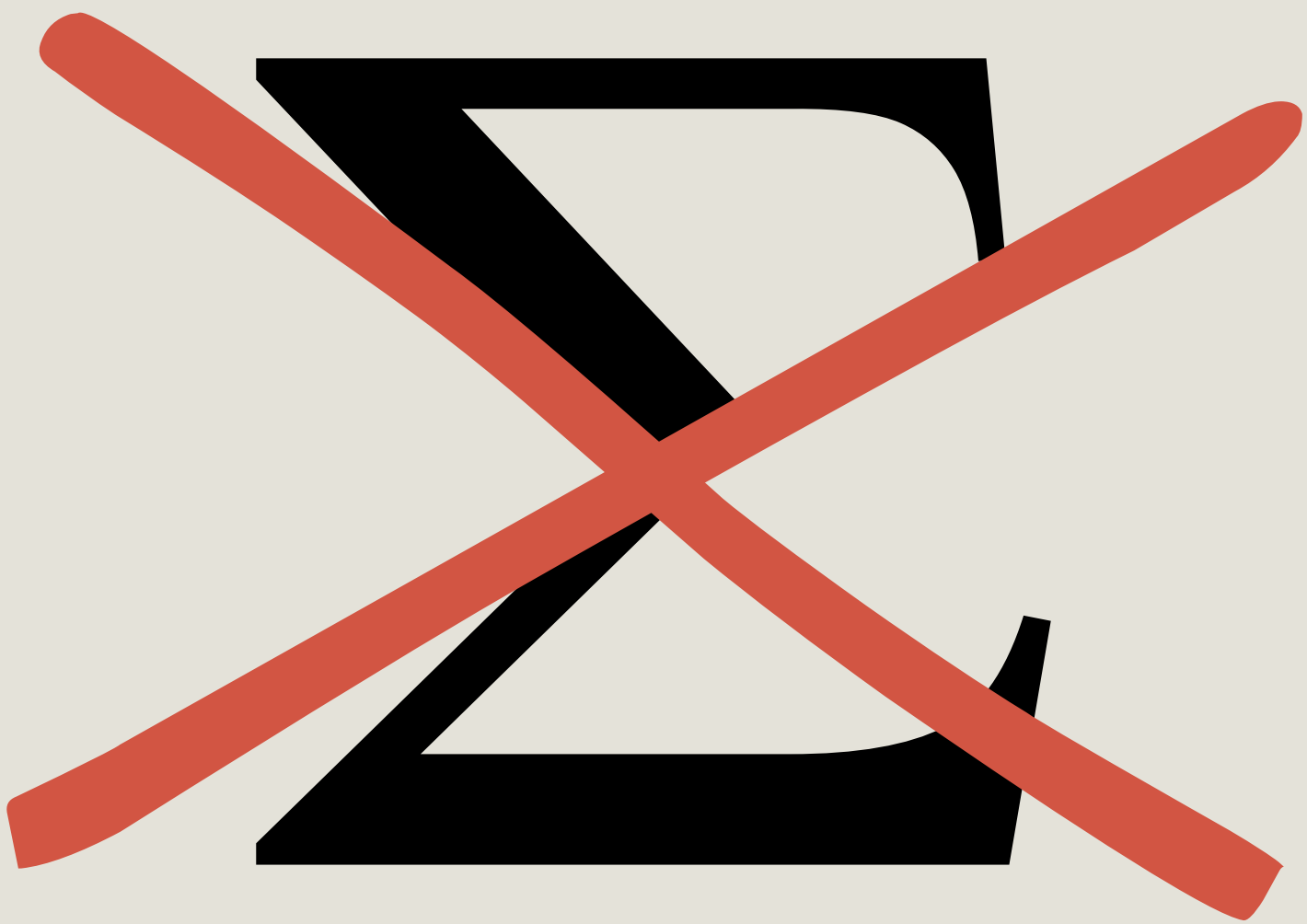
$$\frac{1}{N}$$

I. THE FIRST NOTE

I began with one—so bold, so
sure,
A solid start, a truth so pure.
"One over one," the scholar said,
"Let's see where all your other
numbers fled."

$$\frac{1}{1} \bullet \bullet \bullet$$
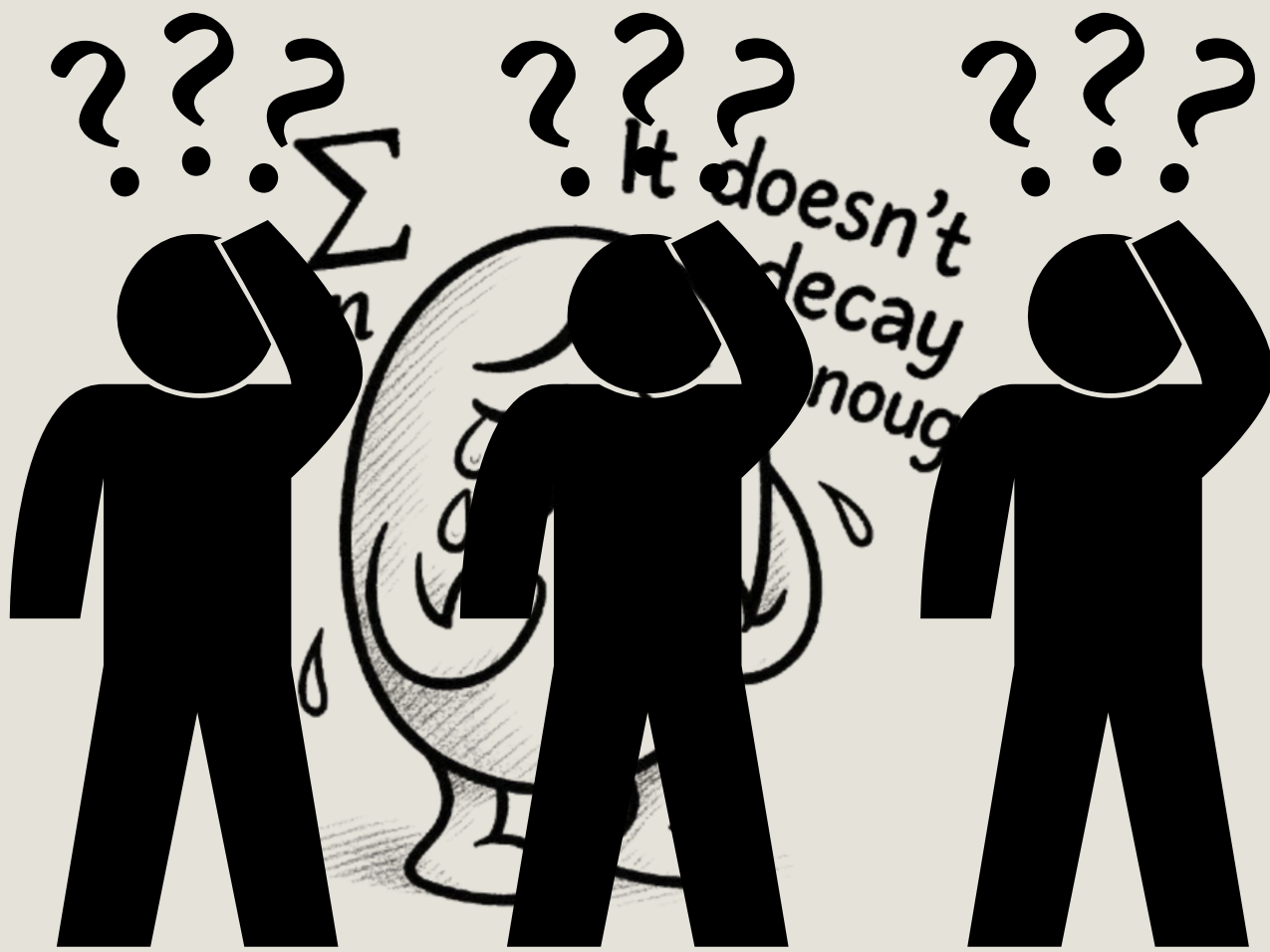
II. SWEET DECAY

"One-half," the scholar
whispered, soft and slight,
"A lesser glow, a dimmer light."
Then came one-third, and one-
fourth, too—
Their values fell like morning
dew.
But in their fall, I felt no peace,
No sign the sum would ever
cease.
The steps grew small, the climb
was steep—
And still, the sum refused to
sleep.

III. ANXIETY AMONG THE SCHOLARS

They tested me with p-series might,
Compared me under Riemann's light.
"If p is more than one," they said,
"The series finds a sum instead."
But mine—mine held to p as one.
A case unique. Oh, wasn't this fun?
I begged, "Am I not slow enough?
My terms decay—yet that's not tough?"

$$\frac{1}{1} \quad \frac{1}{2} \quad \frac{1}{3} \quad \frac{1}{4} \ldots$$

PROVEN

IV. A STRANGE PROOF

A clever hand of Nicole Oresme drew
lines with flair,
Grouped me in pieces, laid me bare:
"One-half stands tall," the thinker
cried,
"But what of these all side by side?"
One-third plus fourth, fifth, sixth, and
seventh—
Summed to more than just a
crescent.
Each group grew tall despite their
spread,
And built a stair that rose instead.

V. THE REALIZATION

It hit me in the final page—
A prisoner of my own slow fade.
I could not stop. I could not stall.
Infinity would have it all.
Each whisper added just enough,
To twist the blade, to make it tough.
No sum would seal my aching soul,
No sigma sign could make me
whole.

NOTE FROM THE POET

The following comical tragedy is set through the eyes of the Harmonic Series of 1/N. When I first learned about diverging series during Unit 10 of my AP Calculus BC Class, I thought it'd be interesting to think about how life would be if I was well.... a never ending thing. To compare that feeling, i chose 1/N, and how there were so many ironically "unharmonic" tragedies that the expression eagerly yet sadly discovered. In a way, we go through times where we feel in a constant loop of decline and sorrow, but I think this story marks the idea that unlike concrete math concepts, we can break past limited notions.