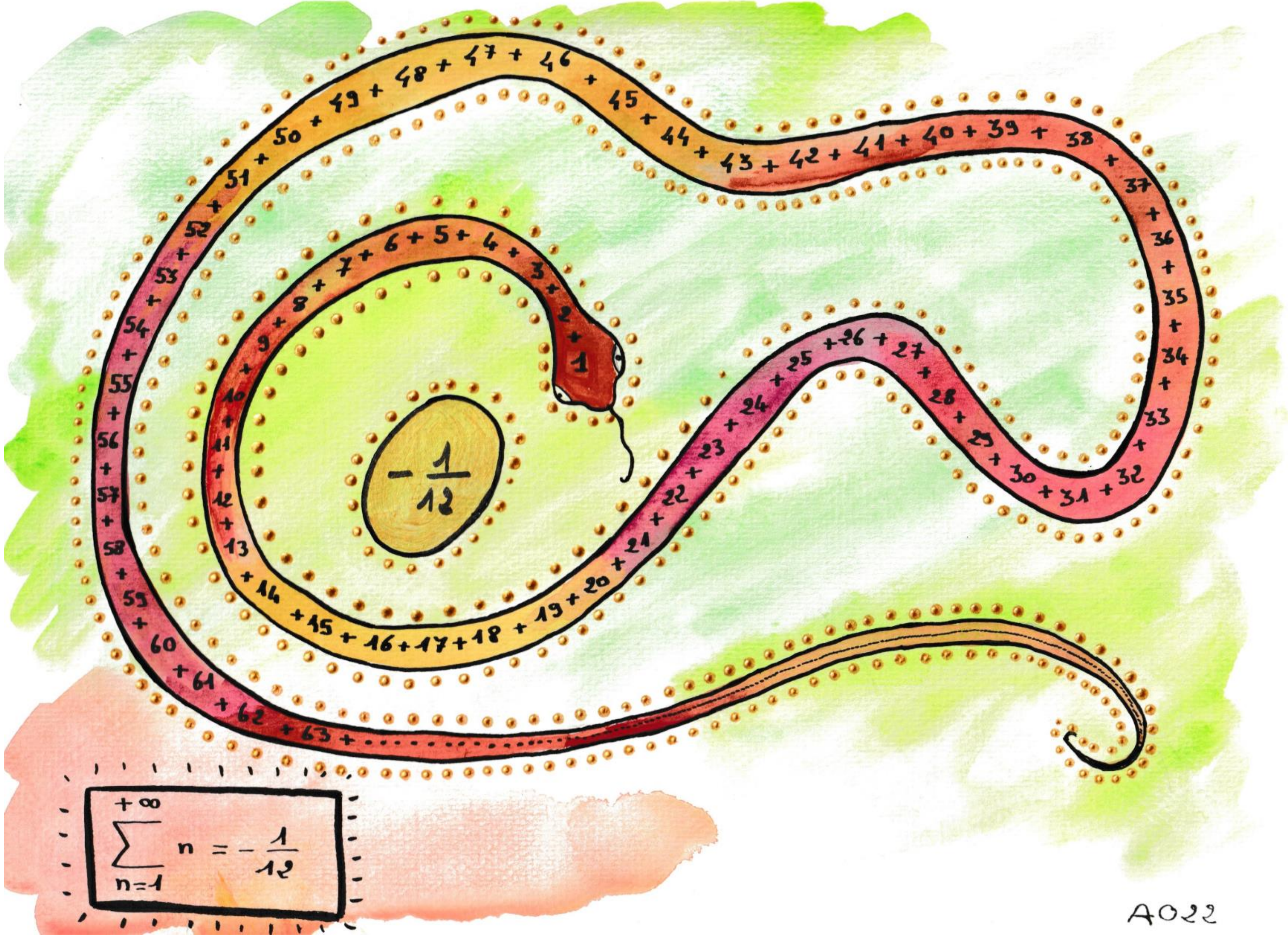
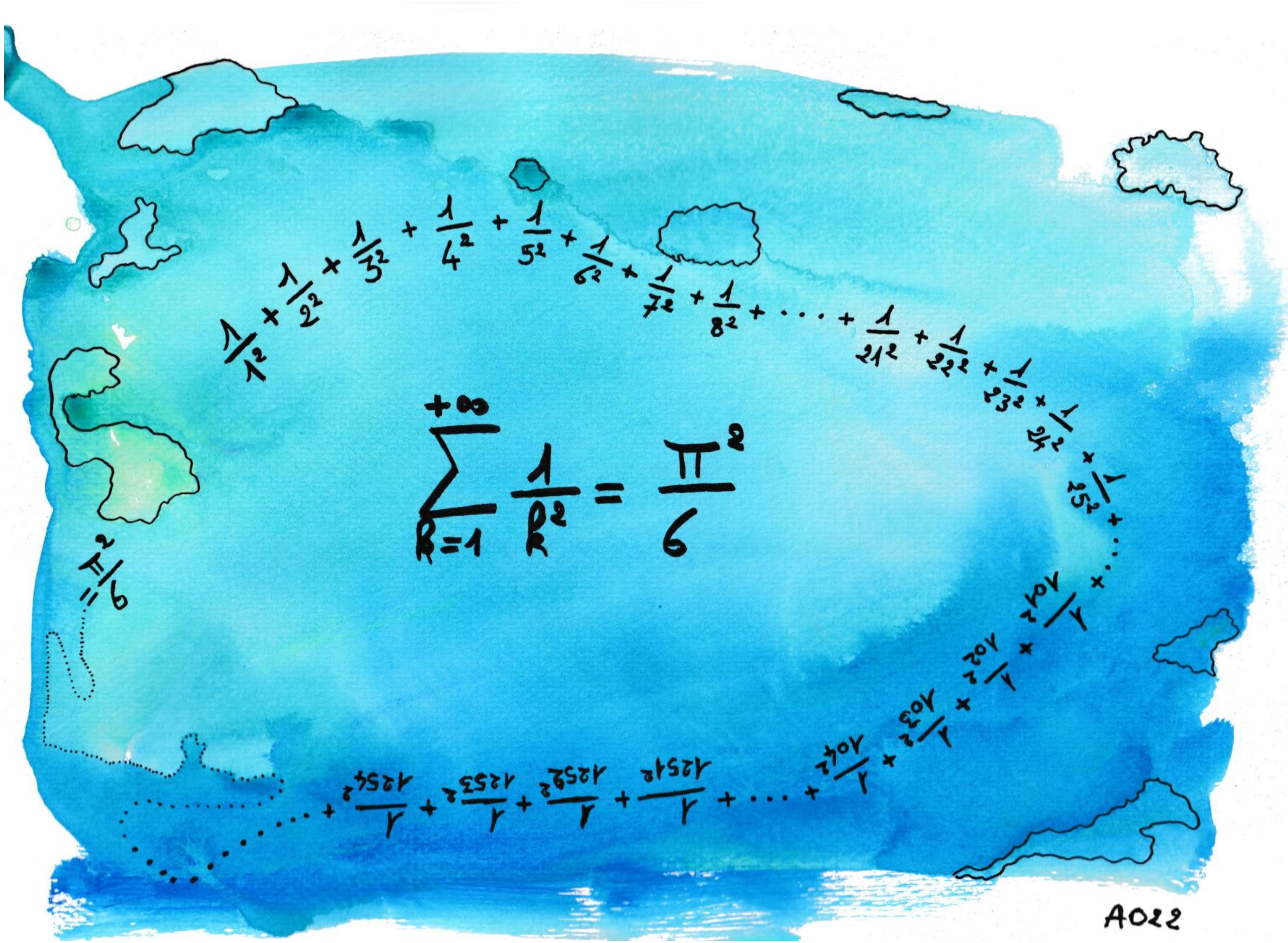
De l’art ou des des maths

Dessins Agnès Rigny • 2023

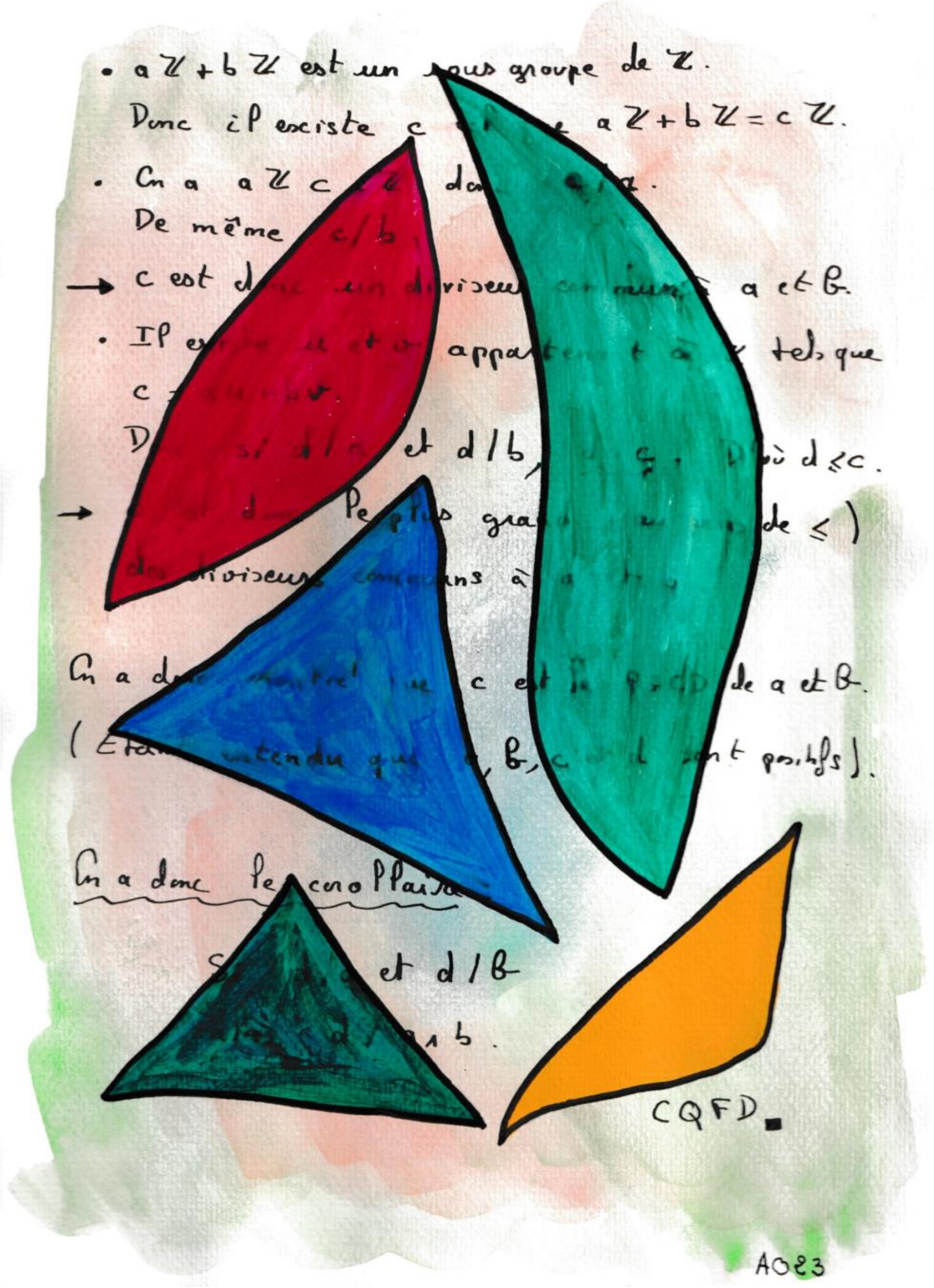

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16 + 17 + 18 + 19 + 20 + 21 + 22 + 23 + 24 + 25 + 26 + 27 + 28 + 29 + 30 + 31 + 32 + 33 + 34 + 35 + 36 + 37 + 38 + 39 + 40 + 41 + 42 + 43 + 44 + 45 + 46 + 47 + 48 + 49 + 50 + 51 + 52 + 53 + 54 + 55 + 56 + 57 + 58 + 59 + 60 + 61 + 62 + 63 + ...
$-\frac{1}{12}$
$\sum_{n=1}^{+\infty} n = -\frac{1}{12}$
A022

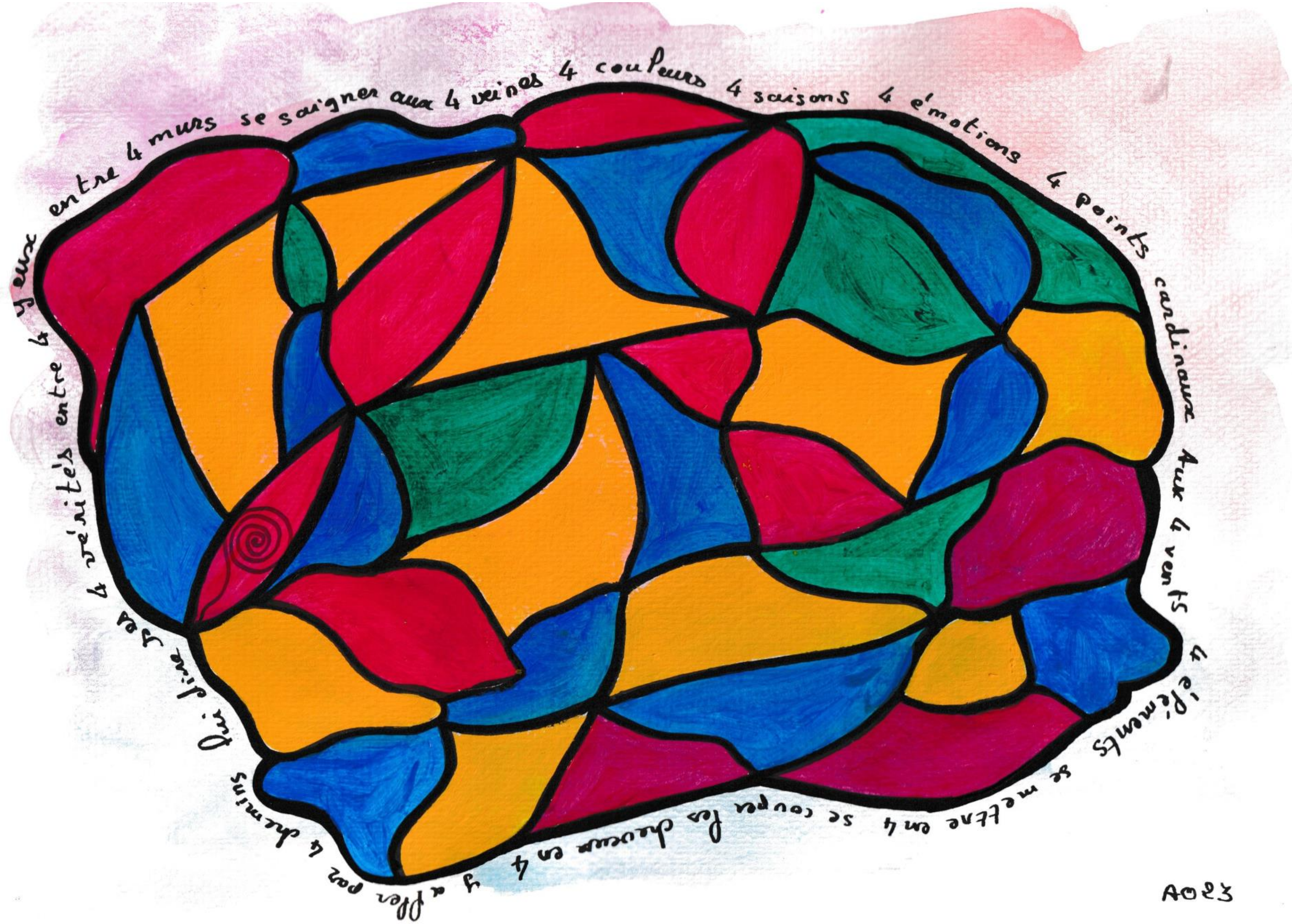


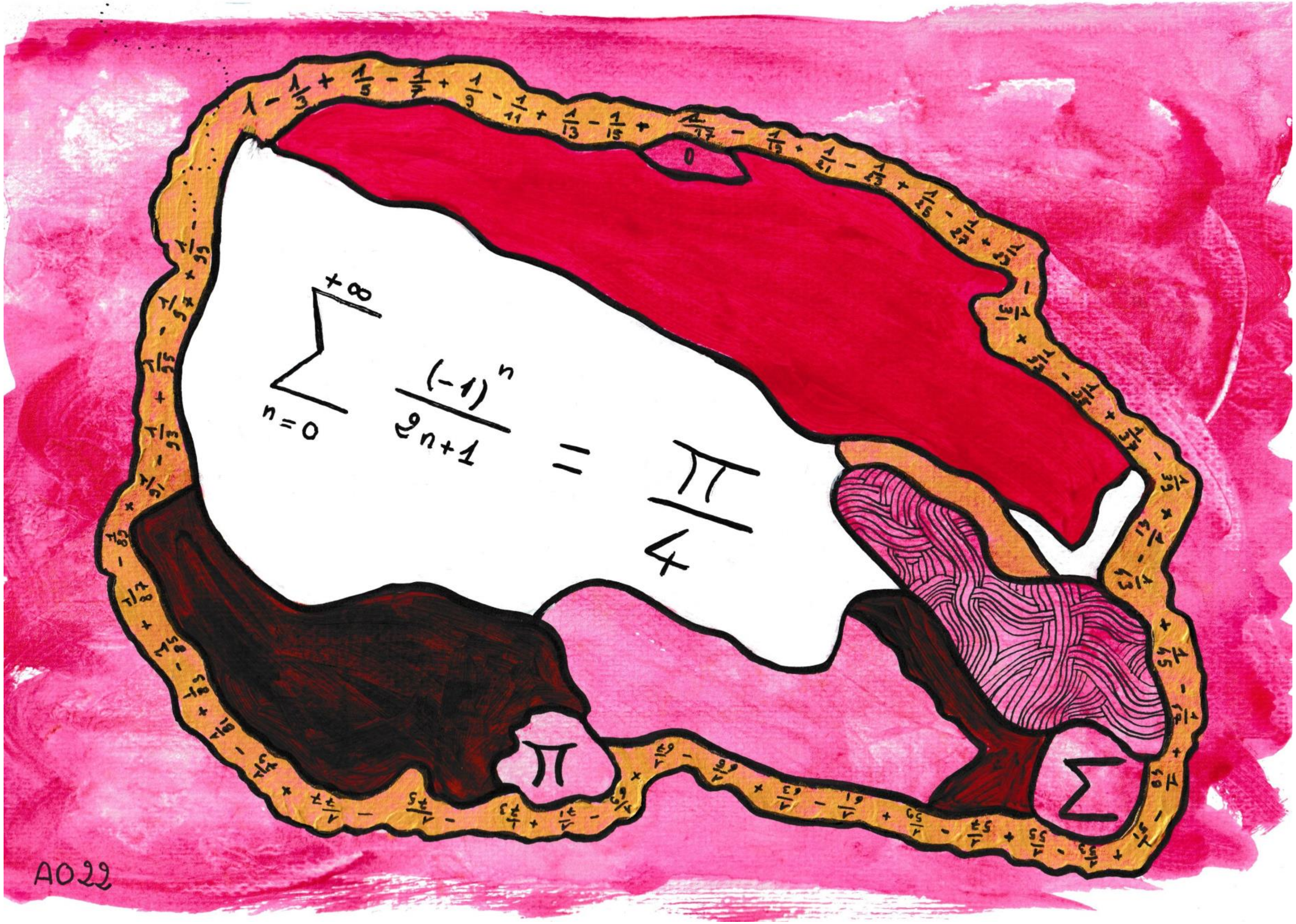
$\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \frac{1}{5^2} + \frac{1}{6^2} + \frac{1}{7^2} + \frac{1}{8^2} + \dots + \frac{1}{21^2} + \frac{1}{22^2} + \frac{1}{23^2} + \frac{1}{24^2} + \frac{1}{25^2} + \dots$
$\sum_{k=1}^{+\infty} \frac{1}{k^2} = \frac{\pi^2}{6}$
$= \frac{\pi^2}{6}$
A022


1
1
2
3
5
8
13
21
34
55
89
144
233
377
610
987
1597
2584
4181
6765
10946
17711
28657
46368
75025
121393
196418
317811
514229
832040
1346269
2178309
3524578
π
AR 91

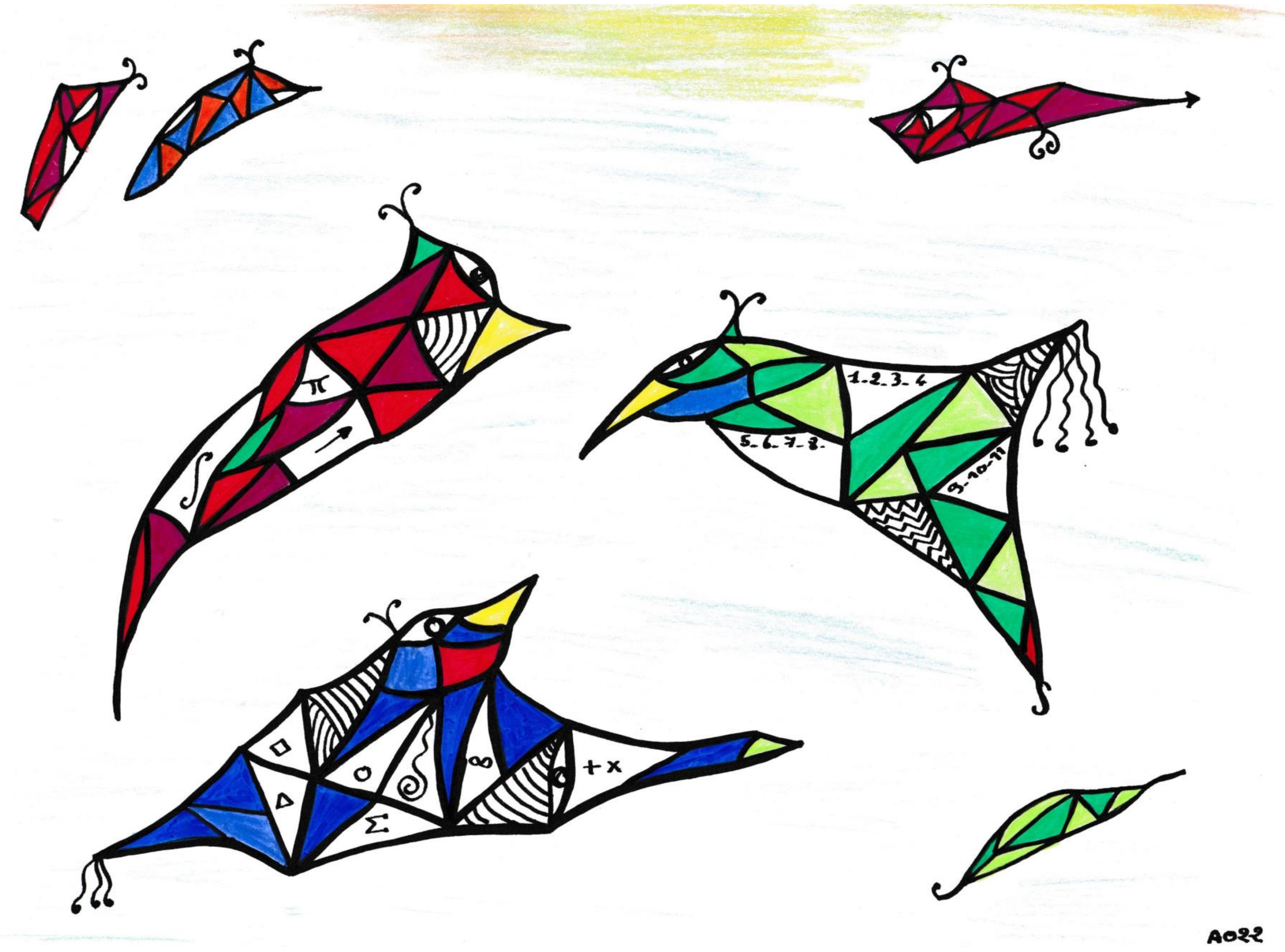

1+1+2+3+5+8+13+21+34+55+89+
AR21


aℤ + bℤ est un
groupe de ℤ.
Donc il existe c
aℤ + bℤ = cℤ.
On a aℤ ⊂
De même c/b
c est
a et b.
Il existe
tels que
et d/b
d ≤ c.
de ≤)
On a donc
de a et b.
(Étant entendu que
sont positifs).
et d/b
CQFD ■
AO23


Dire ses 4 vérités entre 4 yeux entre 4 murs se saigner aux 4 veines 4 couleurs 4 saisons 4 émotions 4 points cardinaux aux 4 vents 4 éléments se mettre en 4 se couper les cheveux en 4 y aller par 4 chemins
AO23

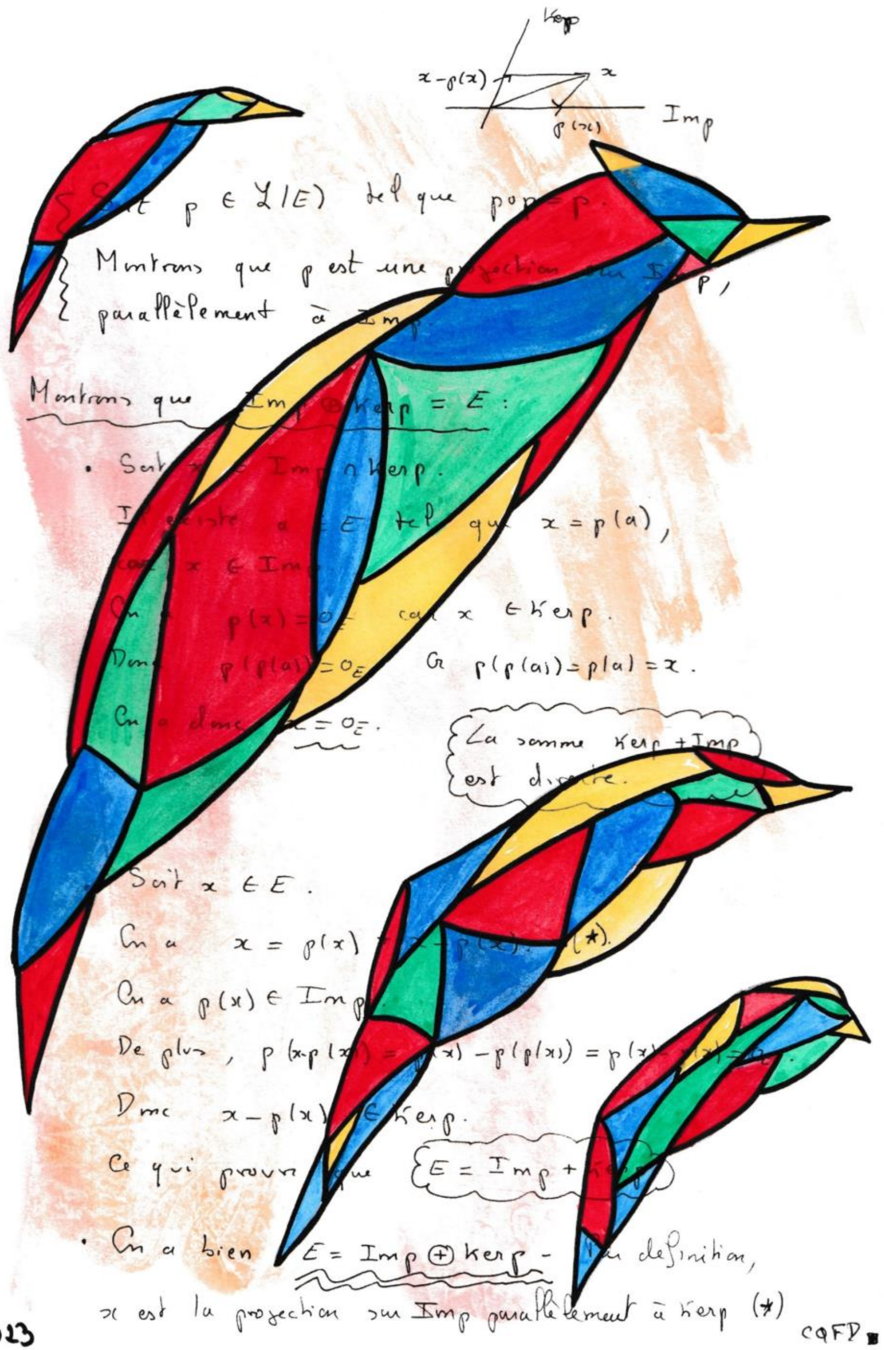


1 - 1/3 + 1/5 - 1/7 + 1/9 - 1/11 + 1/13 - 1/15 +
$\sum_{n=0}^{+\infty} \frac{(-1)^n}{2n+1} = \frac{\pi}{4}$
π
Σ
AO22

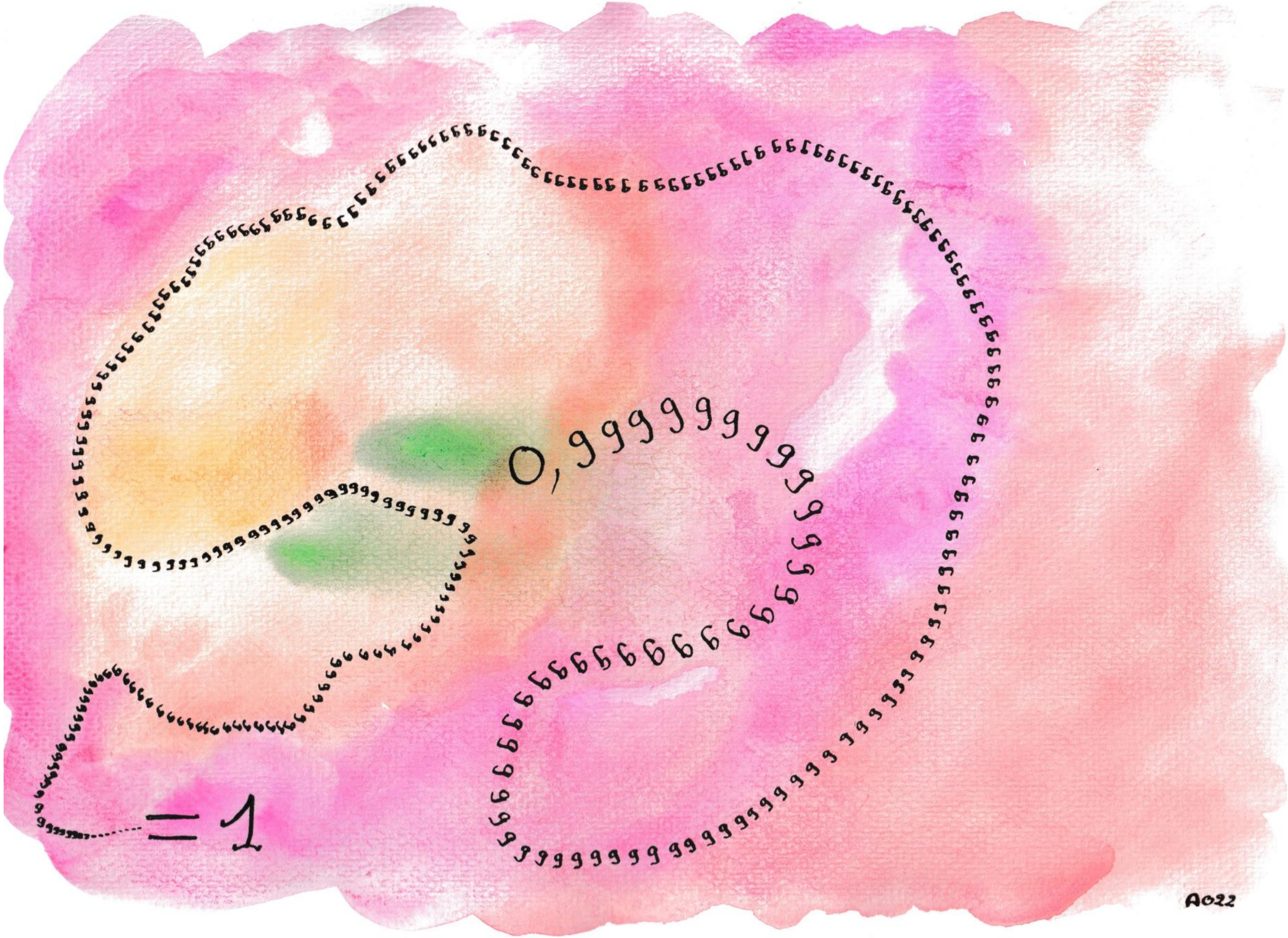

π
1-2-3-4
5-6-7-8-
9-10-11
+x
Σ
A022

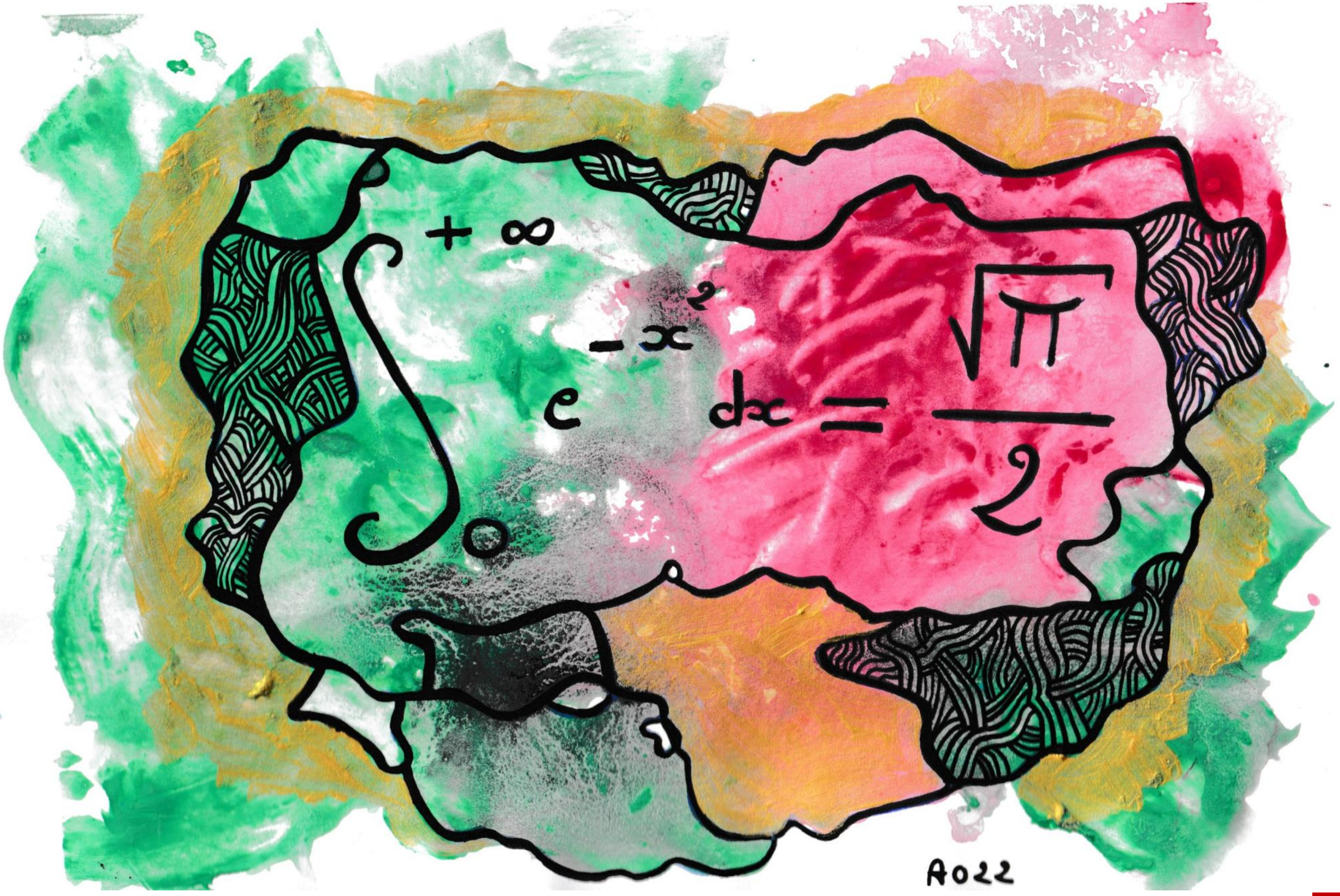

AR21

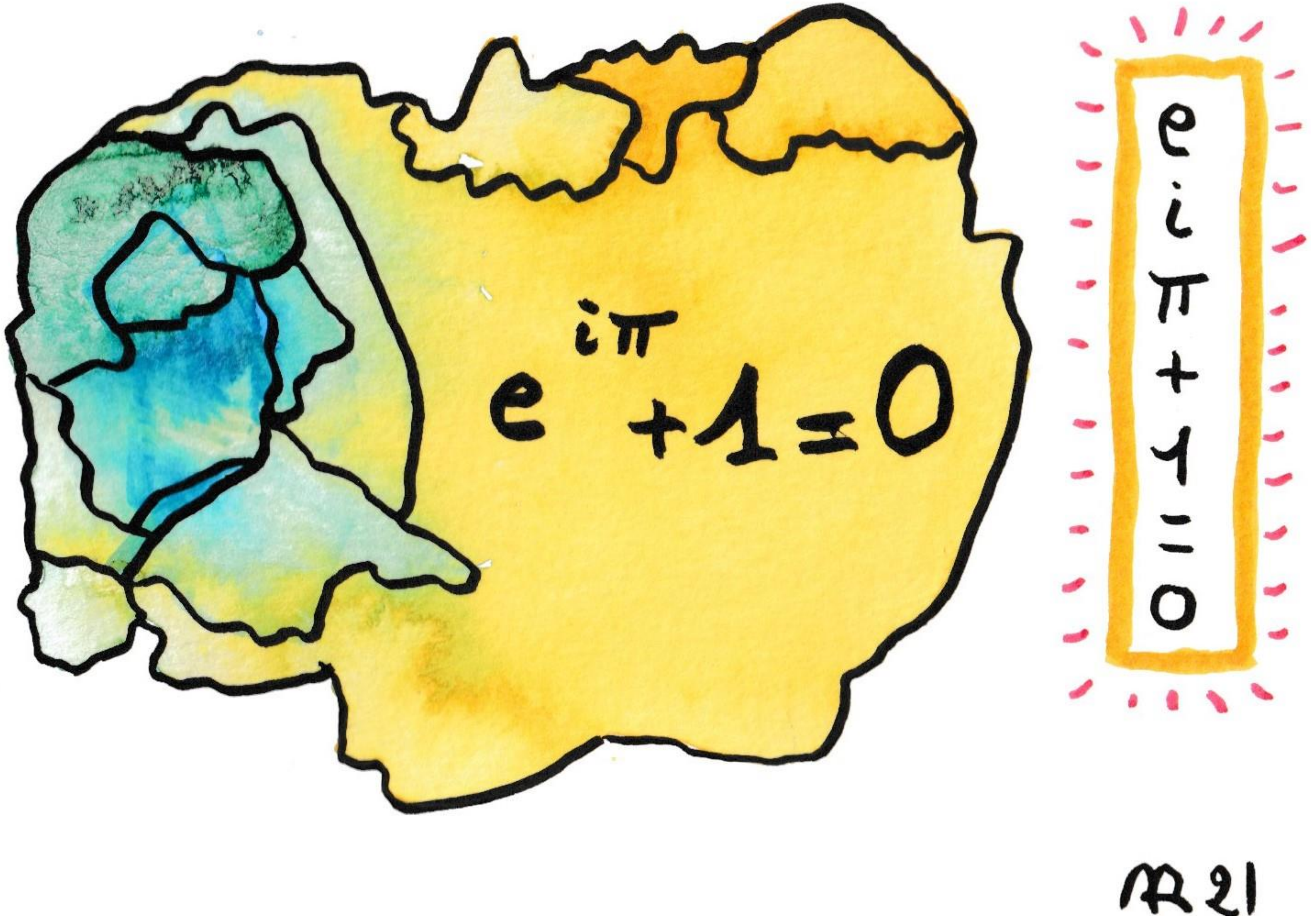

$^tS = S \Rightarrow S = {}^tP \Delta P$
$\dim \ker u + \mathrm{rang}(u) = \dim E$
$\prod_{i=1}^{k} (f - \lambda_i \, id_E) = 0 \Rightarrow E = \bigoplus_{i=1}^{k} \ker(f - \lambda_i \, id_E)$
Le polynôme caractéristique est annulateur
AO23

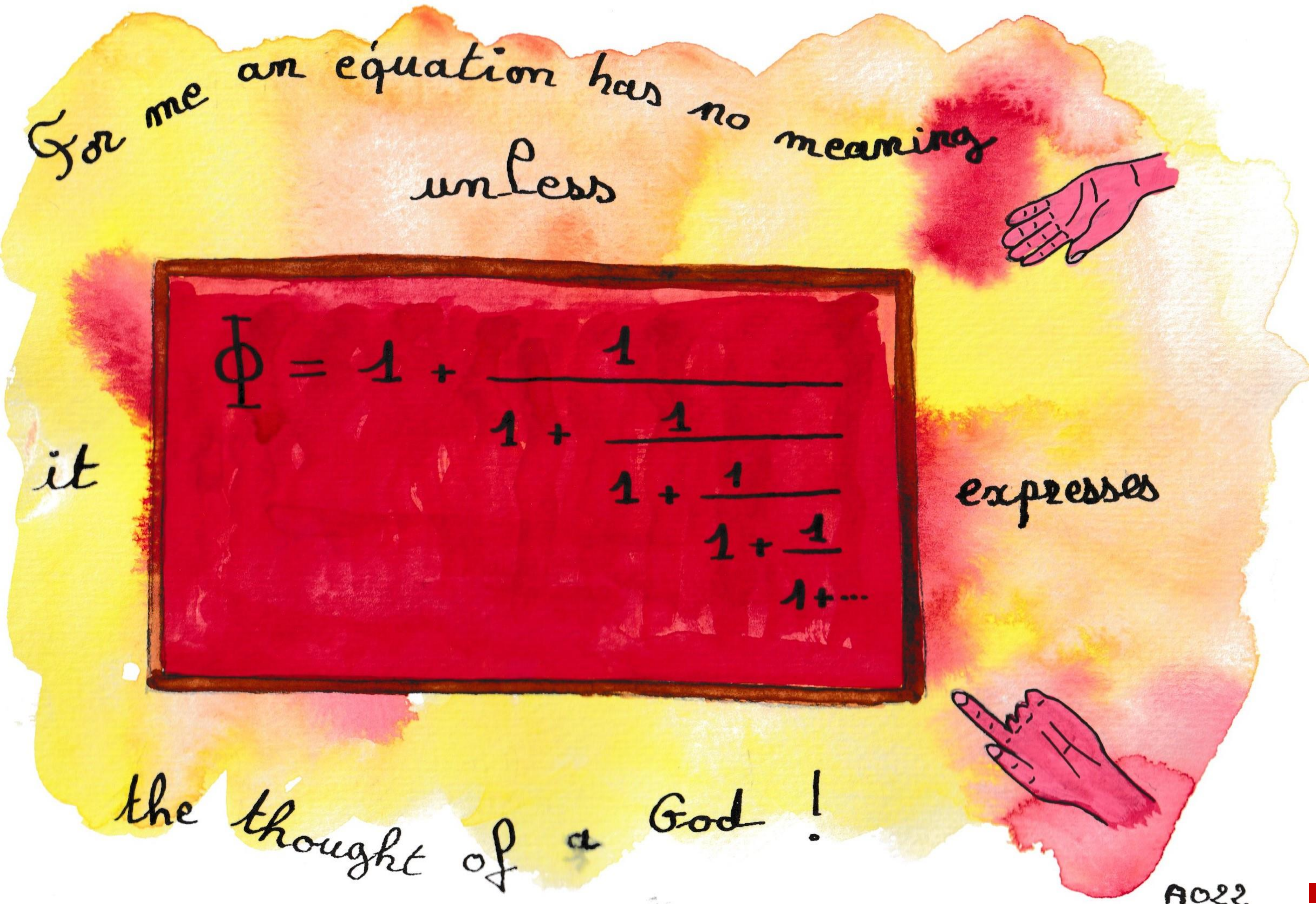

Kerp
x - p(x)
x
Imp
p(x)
Soit p ∈ L(E) tel que pop = p.
Montrons que p est une projection sur Imp,
parallèlement à Kerp
Montrons que Imp ⊕ Kerp = E :
Soit x ∈ Imp ∩ Kerp.
Il existe a ∈ E tel que x = p(a),
car x ∈ Imp.
On a p(x) = 0_E car x ∈ Kerp.
Donc p(p(a)) = 0_E Or p(p(a)) = p(a) = x.
On a donc x = 0_E.
La somme Kerp + Imp est directe.
Soit x ∈ E.
On a x = p(x) + x - p(x). (*)
On a p(x) ∈ Imp
De plus, p(x-p(x)) = p(x) - p(p(x)) = p(x) - p(x) = 0.
Donc x - p(x) ∈ Kerp.
Ce qui prouve que E = Imp + Kerp
On a bien E = Imp ⊕ Kerp - Par définition,
x est la projection sur Imp parallèlement à Kerp (*)
CQFD

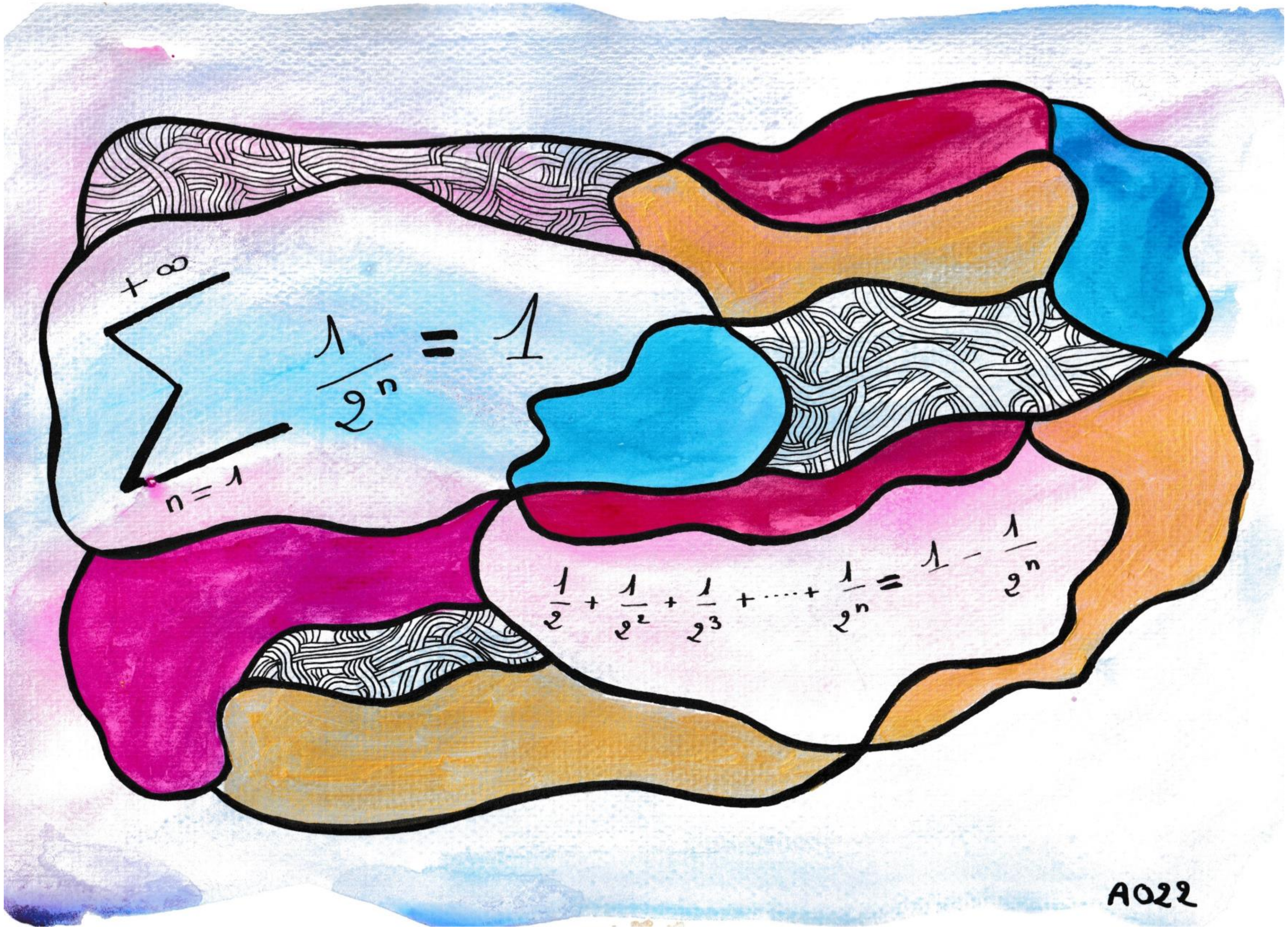
A023

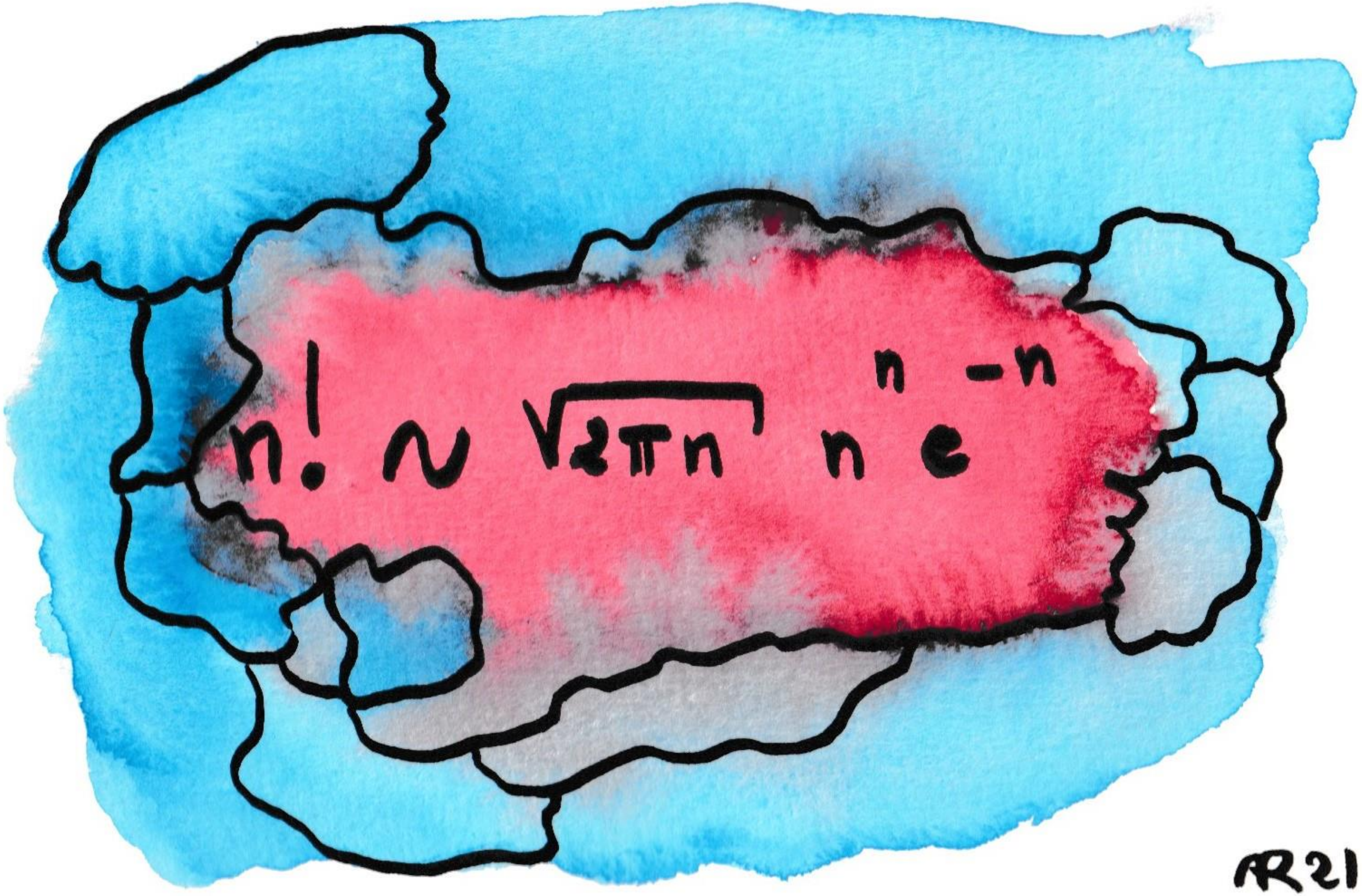

0,999999999
=1
A022


$\int_0^{+\infty} e^{-x^2} dx = \frac{\sqrt{\pi}}{2}$
A022

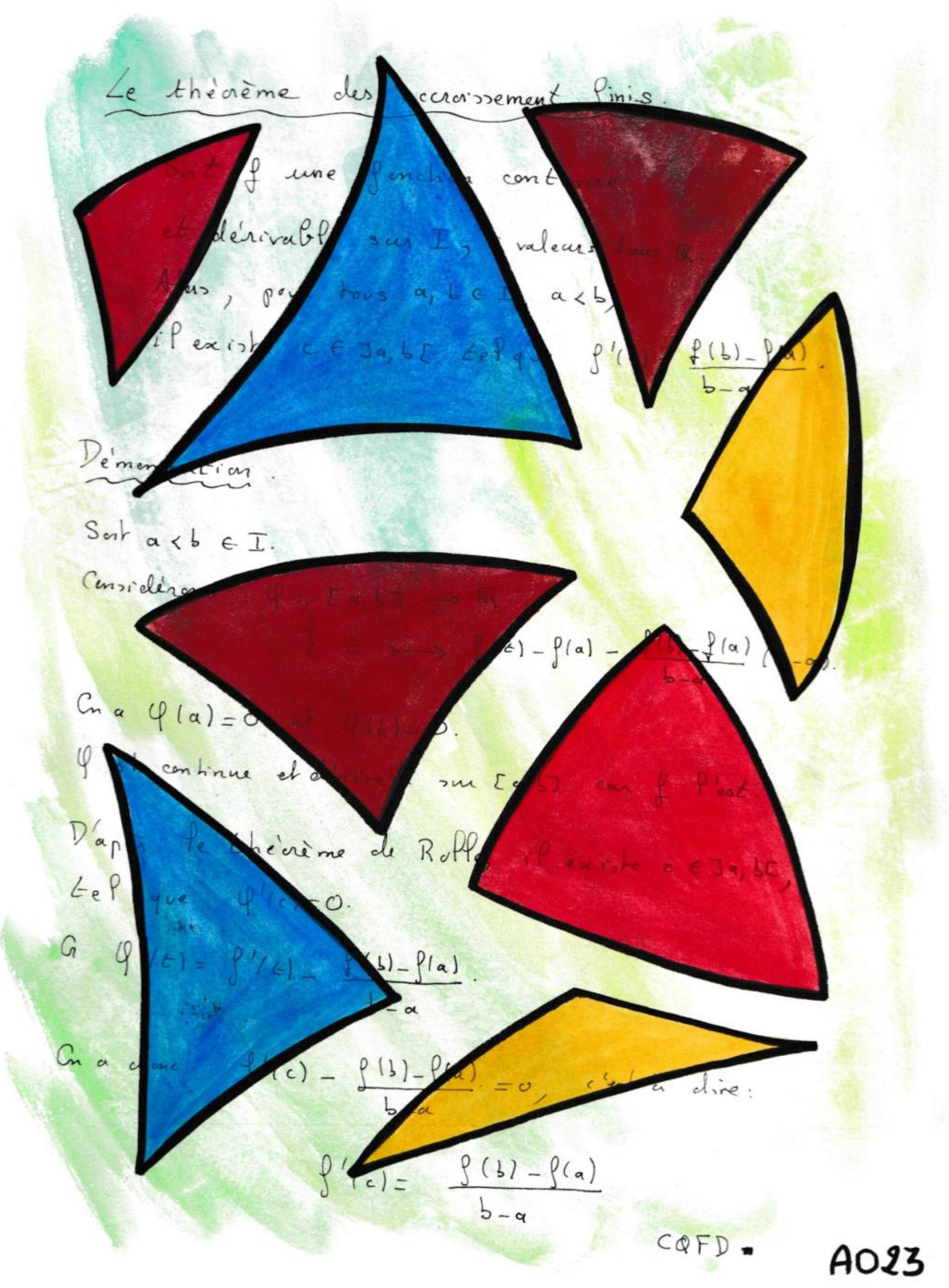

$e^{i\pi}+1=0$
$e^{i\pi}+1=0$

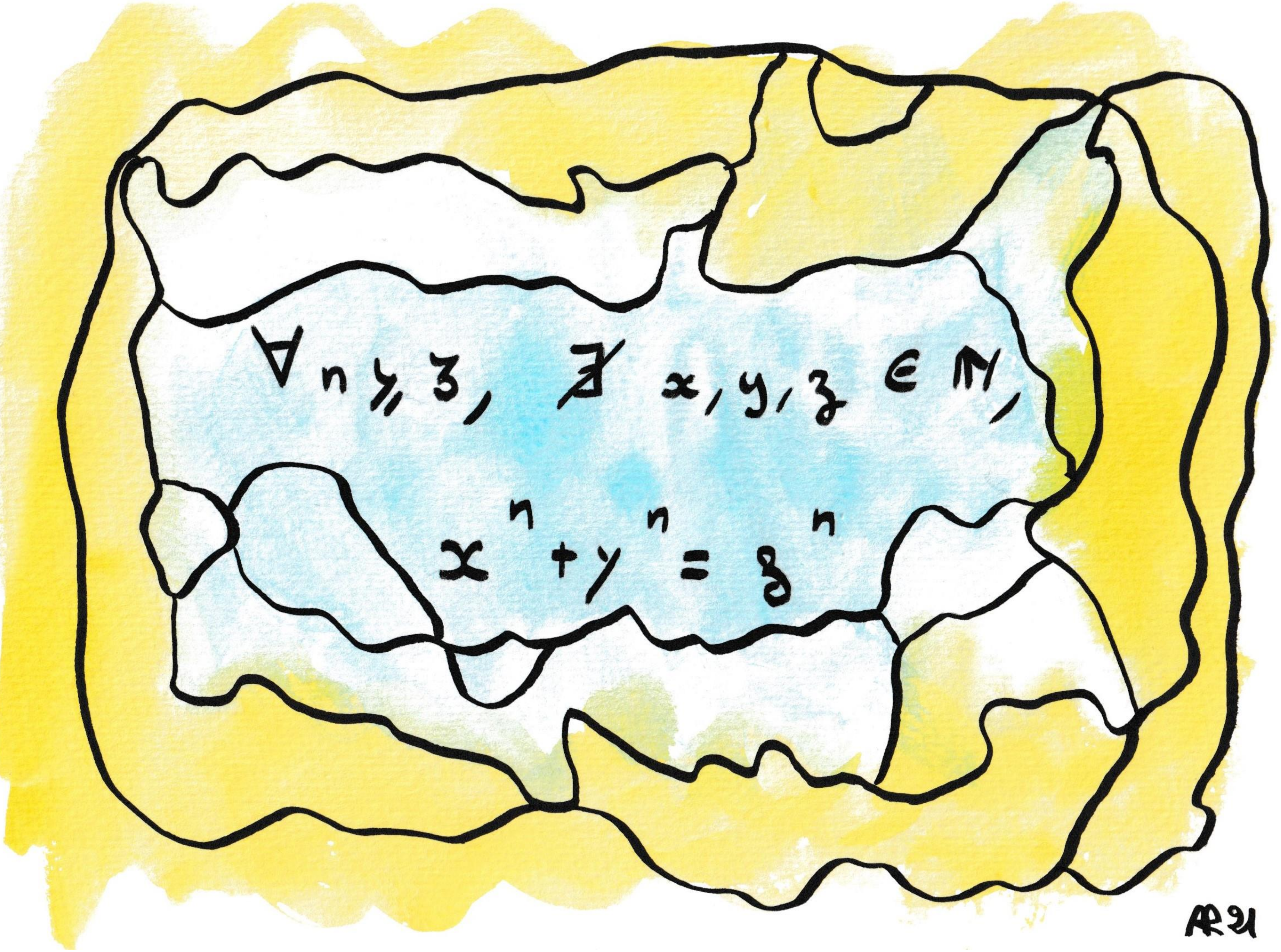

For me an équation has no meaning
unless
it
$\Phi = 1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cdots}}}}$
expresses
the thought of a God !
AO22

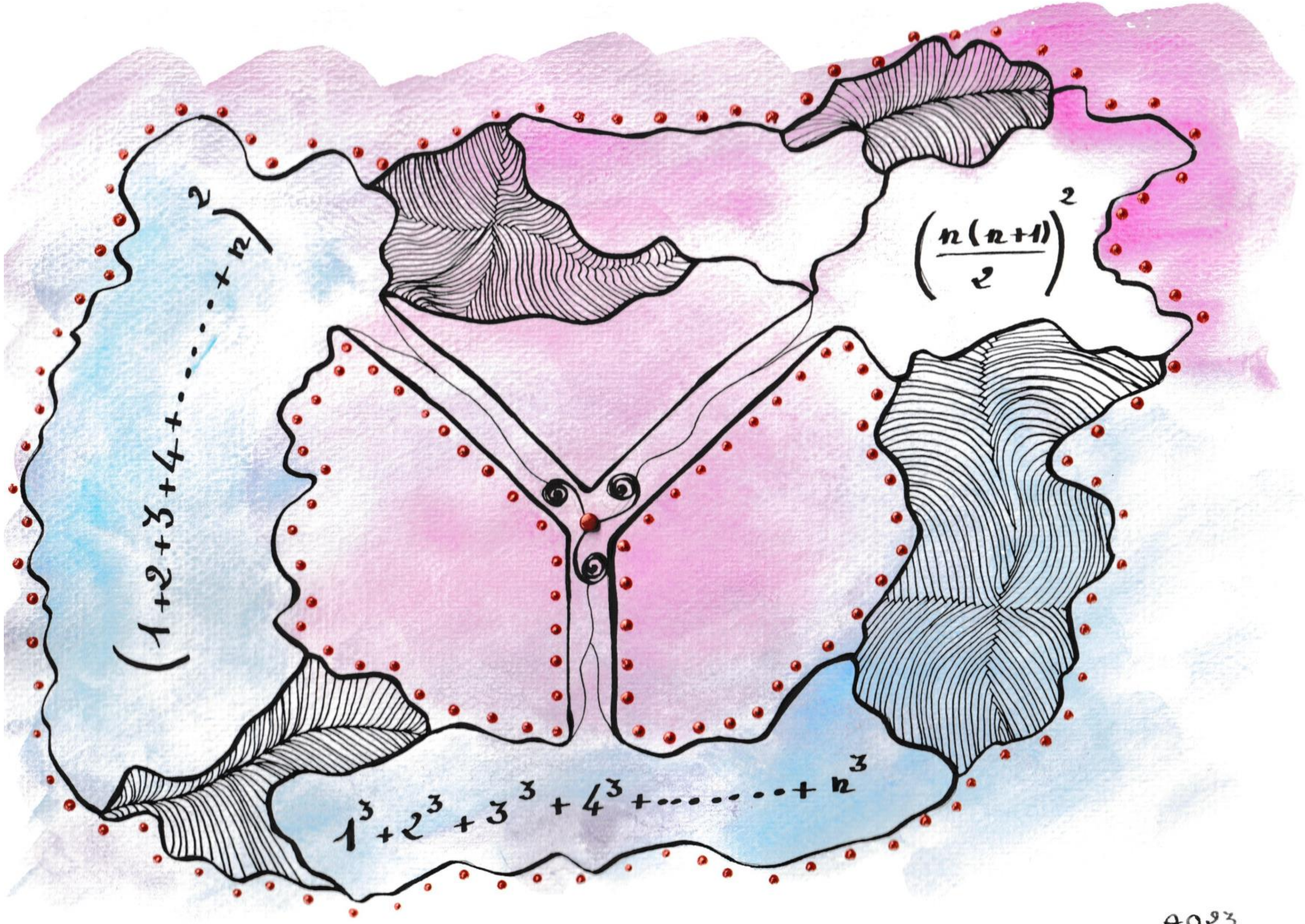

$$\sum_{n=1}^{+\infty} \frac{1}{2^n} = 1$$
$$\frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \dots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$$
AO22

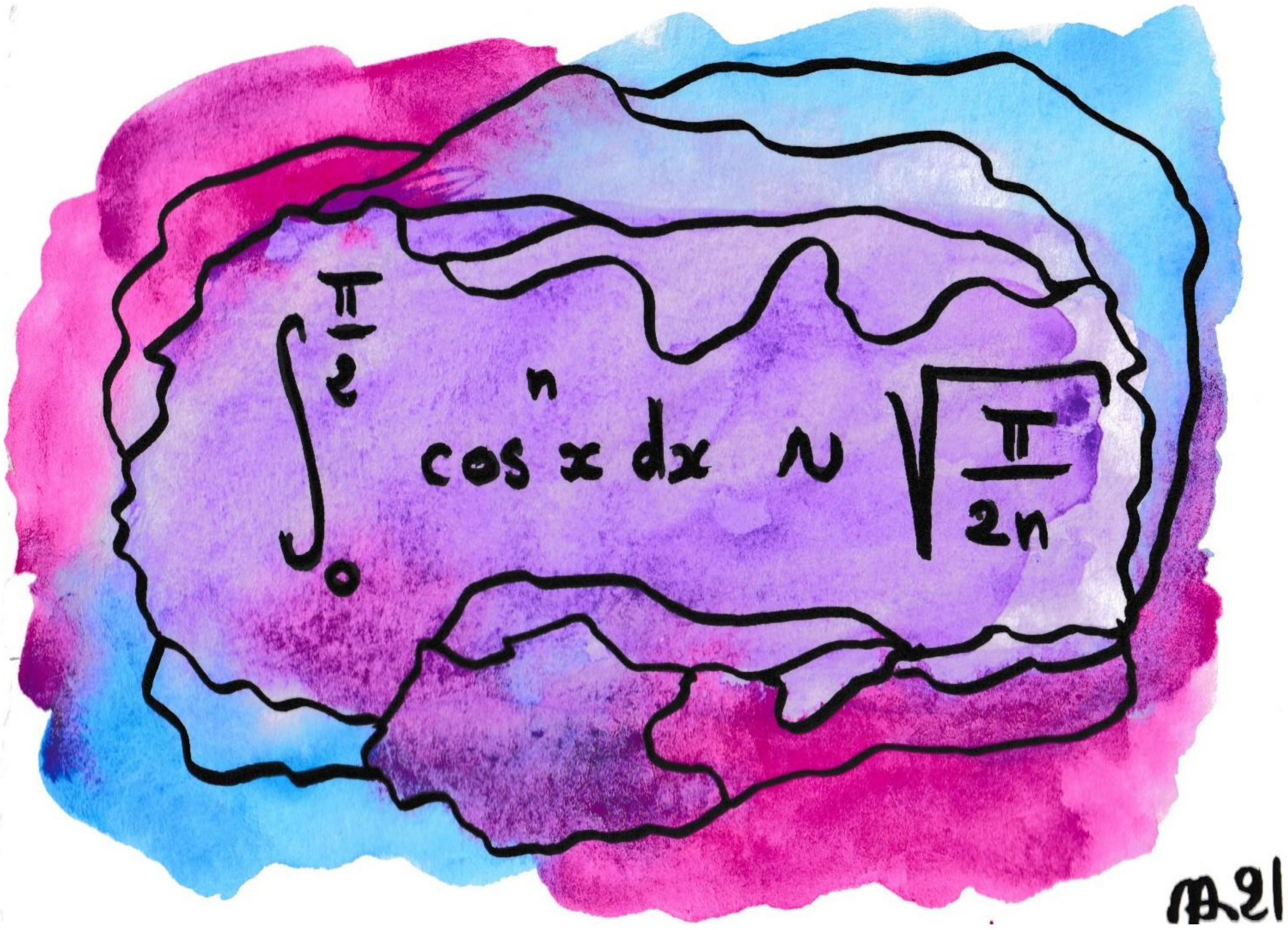


$n! \sim \sqrt{2\pi n}\, n^n e^{-n}$
AR21


Le théorème des accroissement finis.
Démonstration.
Soit a < b ∈ I.
On a φ(a) = 0
f'(c) = (f(b) − f(a))/(b − a)
CQFD ▪
A023


$\forall n \geq 3, \nexists x, y, z \in \mathbb{N},$
$x^n + y^n = z^n$
AR21


$\left(1+2+3+4+\ldots\ldots+n\right)^2$
$\left(\frac{n(n+1)}{2}\right)^2$
$1^3+2^3+3^3+4^3+\ldots\ldots+n^3$
AO23


$\int_0^{\frac{\pi}{2}} \cos^n x \, dx \sim \sqrt{\frac{\pi}{2n}}$

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