

The
MathsJamJam
Songbook
2016

The 59th Street Limit Song

Lyrics by Elizabeth A. Williams 2016

To the tune of 59th Street Bridge Song by Simon and Garfunkel

Slow down, you add too fast
You got to make the sequence last
Just kickin' down convergent terms
Limits are fun and e is groovy

Ba-da-da da-da da-da, e is groovy

Hello constant, whatcha knowin'
I've come to count your digits growin'
Ain'tcha got no primes for me
2 7 1 8 2, e is groovy

Ba-da-da da-da da-da, e is groovy

I've got all n's to use, the formula to keep:
Invert n and add one, to power n then leap
Let infinity drop all its mettle on me
Euler, I love you, e is groovy

A Game with Monty Hall

Lyrics by Phil Chaffé 2016

To the tune of The Winner Takes it All by ABBA

I don't wanna talk, About things I've been through
I hit an HGV, My car was history

I had to get around, and so I made a plan to
win me some new wheels, On the show "Let's make a deal"

*A game with Monty Hall, I thought I'd have a ball
The winner gets to gloat, The loser gets a goat*

I chose my favourite door, Imagining a car there
I figured it made sense, I was over-confident

Monty picked another door, Showing me the goat there
But I was no-one's fool, I'd analyzed the rules

*If I swapped doors in a trice, At vos Savant's advice
The probability, would go up to 2 in 3*

*And then old Monty Hall, lead to my downfall
I slumped into my seat, as my prize let out a bleat*

I couldn't take defeat, I couldn't remain beaten
I entered once again, In disguise with a new name

Somewhere deep inside, I knew I was missing something
But what can I say, I just had to play

*Probability decides, The likes of me abide
Strategic dominance, Lead me a merry dance*

*Which one will get my vote, A motor or a goat
I played 100 times in all, That game with Monty Hall*

I don't wanna talk, If it makes you feel sad
I'll take you by the arm, and show you my goat farm

I apologize, I shouldn't make you feel bad
You see I was allowed, A silver lining in my cloud

*In ... That game with Monty Hall
That game with Monty Hall*

Approximate Pi

Lyrics by Phil Chaffé 2016

To the tune of American Pie by Don McLean

A long, long time ago, I can still remember how those circles
used to make me smile, And I knew if I had my chance,
That I'd find the circumfer-ance, And maybe I'd be happy for a while

But then I didn't feel so clever, 'cos three-d gave a great big error
At 4.51 percent, That was when my smile went
I can't remember if I cried, When my poor approximation died
But something touched me deep inside, Approximating pi

So bye, bye, approximate pi
Drove a bevy of maths heavys to diversify
Them good ole boys were all such rational guys
Singin' there'll be something better to try
There's a better value for pi

In the Papyrus of Rhind, The Egyptians used a different pi
Three point one six oh five oh, And Leibnitz looked at pi by four (as did Gregory)
And gave us something that's a real bore , A series that converged but real slow

Well, I know about Ramanujan, His modular form masterplan
A series hard to prove, But it eased those pi-findin' blues
I was a lonely mathematics schmuck, With my pi obsession I was getting stuck
I knew that I was a lame duck, Approximating pi

So bye, bye, approximate pi
Drove a bevy of maths heavys to diversify
Them good ole boys were all such rational guys
Singin' there'll be something better to try
There's a better value for pi

Now 13 trillion digits of pi are known, And it's sure got fat and overblown
But that's not how it used to be, When old Archimedes inequality
Sidestepped pi's irrationality, And transcendental was a word we'd yet to see

Oh, and while we're putting ideas down, Count Buffon throwing sticks around
At parallel lines he learned, A value of pi was returned
And while Euler with his arctan lark, Made his pi approximating mark
We were still all in the dark, Approximating pi

So bye, bye, approximate pi
Drove a bevy of maths heavys to diversify
Them good ole boys were all such rational guys

*Singin' there'll be something better to try,
There's a better value for pi*

Helter skelter nested fraction beltors, Functions that iterate on fast computers,
Trillions of digits and growing fast, Hand calculations are in the past,
The Chudnovsky algorithm has surpassed, With pi jesting on the sidelines to the last

Now the crackling air is poor perfume, As computers work all afternoon
To make those digits dance, It's now the programmers' chance
To try to get that pi to yield, And add some knowledge to the field
Do you recall what was revealed, Approximating pi?

*So bye, bye, approximate pi,
Drove a bevy of maths heavys to diversify
Them good ole boys were all such rational guys
Singin' there'll be something better to try
There's a better value for pi*

[nice 'n' slow]

I met a girl who sang the blues, And I asked her for some circle news,
But she just smiled and turned away, And said pi should be used no more,
And that tau was easier to adore, Much more beautiful to use in every way
And in the streets, piphologists screamed, And beat their chests while tau-ists dreamed
Pi formulae dismantled, And pi day? It was cancelled.
And the two men I admire most, Euler and Gauss, now sadly ghosts
Would both have raised tau in a toast, Instead of toasting pi

*So bye, bye, approximate pi
Drove a bevy of maths heavys to diversify
Them good ole boys were all such rational guys
Singin' there'll be something better to try,
There's a better value for pi*

*So bye, bye, approximate pi
Drove a bevy of maths heavys to diversify
Them good ole boys were all such rational guys
Singin' there'll be something better to try
But we sing tau's a better value than pi*

Half Plus a Half the Square Root of Five

Lyrics by Tom Button 2016

To the tune of Sweet Child O' Mine

It's got a size that it seems to me,
Is the essence of irrationality
It's the value phi that equals one plus over one phi
It's the ratio at infinity,
Of successive pairs from Fibonacci
And it's a pentagon's diagonal's ratio to its side

*A half plus a half the square root of five
A half plus a half the square root of five*

Cut a square from a golden rectangle,
it's similar to the original
So a plus b is to a as a is to b
For the centre of a dodecahedron's face,
Cross three golden rectangles in 3D space
And the corners are an icosahedron's vertices

*A half plus a half the square root of five
A half plus a half the square root of five*

You can find it in nature in the patterns of seeds
And the logarithmic spiral of galaxies
And in the work of artists like Dali and da Vinci
The proportion is known of as divine
and was Kepler's favourite way to split a line
But it's a myth that it's the nicest ratio aesthetically

*A half plus a half the square root of five
A half plus a half the square root of five
A half plus a half the square root of five
A half plus a half the square root of five*

Golden ratio, golden ratio, golden ratio
Golden ratio, golden ratio, golden ratio
Golden ratio, golden ratio, golden ratio, to 30 d.p. it's...
1.61 8033
9887 498
9484 8204
5868
3436
5

I am the Very Model of a Jammer Mathematical

Lyrics by Nicholas Jackson 2016

To the tune of I Am the Very Model of a Modern Major General

I am the very model of a jammer mathematical,
I'm keen on games and puzzles
with a zeal that is fanatical,
I built a Raspberry Pi into a calculator musical,
I made a Twitter bot
reposting sequences numerical.

I'm very well acquainted too, with matters algebraical,
I drink my cup of coffee, from a doughnut topological,
I juggle balls and clubs, in patterns concrete and theoretical,
On whether two and three are prime, my thinking is heretical.

On whether two and three are prime, his thinking is heretical,
On whether two and three are prime, his thinking is heretical,
On whether two and three are prime, his views are dangerous and heretical

I'll show you tricks with cards and coins
that border on the magical,
I've knitted shawls and rugs into
designs that are geometrical,
My metacompetitions baffle theorists categorical,
My axioms for playing Set are found to be unbeatable.

I know of hierarchies of infinities uncountable,
My strong opinions on both pi and tau are nigh irrational,
I bake my cakes and biscuits with precision analytical,
My expertise is legendary at Dobble, Chess and Hnefatafl.

His expertise is legendary at Dobble, Chess and Hnefatafl,
His expertise is legendary at Dobble, Chess and Hnefatafl,
His expertise is legendary at Dobble, Chess and Meta-Hnefatafl.

I'll gladly show you working Lego models horological,
And polyhedra unistable, stellar or platonical,
And yet when all is said and done,
I'll tell you most emphatical,
I am the very model of a jammer mathematical.

And yet when all is said and done,
we'll tell you most emphatical,
He is the very model of a jammer mathematical.

Prime - A tale of envy and loneliness

Lyrics by Sam Hartburn 2016

To the tune of Creep by Radiohead

Look at you, twenty-four
You divide so many ways
In fours and in sixes
In threes and in eights
You're a composite number
In a composite world
You've so many factors
I wish I had factors

*But I'm a prime
I'm a weirdo
There's no numbers in my tribe
You can't divide me*

I don't care if it hurts
I want an integer half
I want a proper factor
Just one'd be enough
I want you to make me
Into three equal groups
You've so many factors
I wish I had factors

*But I'm a prime
I'm a weirdo
There's no numbers in my tribe
You can't divide me*

Scalene

Lyrics by Tom Button 2016

To the tune of Jolene by Dolly Parton

*Scalene, Scalene, Scalene, Scalene
Scalene triangles, I'm your biggest fan
Scalene, Scalene, Scalene, Scalene
All your angles have a different tan*

Your beauty is beyond compare
No two of your sides make a pair
Your asymmetry
makes me feel serene
For equilaterals I despair
And isosceles I do not care
You're the only shape for me, Scalene

In some cases you are acute
Other times you are quite obtuse
But your right-angled forms
are the best I've seen
Especially Pythagoras
And the examples he gave to us
Like a three, four five and a five, twelve, thirteen

*Scalene, Scalene, Scalene, Scalene
Scalene triangles, I'm your biggest fan
Scalene, Scalene, Scalene, Scalene
All your angles have a different tan*

Your beauty is beyond compare
No two of your sides make a pair
Your asymmetry, makes me feel serene
For equilaterals I despair
And isosceles I do not care
You're the only shape for me, Scalene

*Scalene, Scalene, Scalene, Scalene
Scalene triangles, I'm your biggest fan
Scalene, Scalene, Scalene, Scalene
All your angles have a different tan*

*Scalene, Scalene, Scalene, Scalene
Scalene triangles, I'm your biggest fan
Scalene, Scalene, Scalene, Scalene
All your angles have a different tan*

Sin on Cos Can Turn into Tan

Lyrics by Colin Beveridge 2016

To the tune of Santa Claus is Coming to Town

You'd better swot up, it's hard to get by
Unless you know the graphs from 0 to 2π ,
Sin on cos can turn into tan.

You're squaring sin x, squaring the cos,
You're going to get one whatever x was,
Sin on cos can turn into tan.

*You even know the hard ones,
you barely have to check
You know that $1 + \tan^2 x$
becomes the square of sec!*

You've drawn it all out, it's easy to see,
Cos pi by six is half of root 3
Sin on cos can turn into tan.

*You've picked up all the formulas,
you've read them through and through
The area of a sector
is $r^2 \theta$ over two*

You used to hate radians, now it's your strength
Since you learned that $r \theta$ gives the arc-length
Sin on cos can turn into tan.

*Your teacher's in a Santa hat,
you swear that you don't know her
Because there's really no excuse
for ho-ho-hoh-cah-toa.*

You'd better swot up, it's hard to get by
Unless you know the graphs from 0 to 2π ,
Sin on cos can turn into tan.

Sin on cos can turn into tan.