



# Cultivating curves

We in the sciences use mathematics,  
our alternate language of choice,  
When words from the dictionary only provide  
a most imprecise version of voice.  
And those dense equations explain in detail  
how things we study behave.  
They are filled with the symbols that never will fail  
to reveal a gravitational wave,  
Or other phantasms concealed but  
then over whose ken we rejoice.

But the math is so dry and the symbols remote,  
their full meaning remains out of reach  
Until we devise a much better way both  
to learn for ourselves and to teach.  
Oh the curve, the curve, the wonderful curve,  
is as useful as it's elegant.

It shows us the essence of all it plots out;  
do without it?—in fact we just can't.

Oscillations harmonic control many things  
That require engineering designs.  
To account for the frequencies nature oft brings,  
Monsieur Fourier suggests we sum sines.

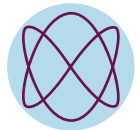
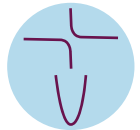
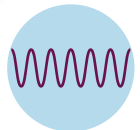
Parabolic trajectories are the outcome  
When balls are tossed in the air.  
When a comet swings by with enough energy,  
It's a stunning hyperbolic affair.

$$G_{\mu\nu} = 8\pi G(T_{\mu\nu} + \rho\Lambda g_{\mu\nu})$$



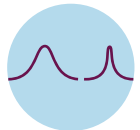
Thanks to Herr Kepler, our space probes and ships  
Will know what to expect in the cosmos.  
They know that their orbits will trace an ellipse  
When to planets or stars they come too close.

For these symbols of science on TV and logos,  
We are indebted to Monsieur Lissajous.  
The gist of our message in simplest of prose  
Is a hearty "merci beaucoup."



An orchestra's timpani along with its snare  
Are where rhythmic patterns are found.  
Would their music have filled as much of the air  
Had Bessel not figured the source of their sound?

The perennial battle twixt Gauss and Lorentz  
Cannot be resolved by statistics.  
We must rely on the elements  
Of the spectral line's characteristics.



According to every biologist's oath,  
A precipitate rise of whatever's essential  
Is always accompanied by unbounded growth,  
And must be exposed by a pure exponential.

Going off on a tangent is just a cliché  
Unless sine over cosine is nigh.  
And if one over cosine is play of the day,  
Then the secant is here to apply.



Probes after light years will find on arrival  
Halos of dark matter in ample supply,  
But only 'round galaxies known to be spiral  
Where stars move more slowly when they fly by.

It traces the rim of a rolling wheel  
And this curve is one to avoid,  
For it stops for no soul despite an appeal  
In the path of the pointed cycloid.



If ever advised in a classroom one day  
That "grading will be on a curve,"  
Suggest that all students and you choose the curve  
That is used to determine your fate.  
Expect that the Gaussian will still be preserved  
But it should make for a thrilling debate.



E.N. Kaufmann