$a \neq 0$ and $b \neq 0$. Thus with

$$(a, b) = \left(w(w-2)\left(w^2 - w + 1\right), -w^2(w-1)\left(w^2 - 2w + 2\right)\right)$$

where w is an integer different from 0, 1 and 2, we obtain infinitely many cubics $x^3 + ax + b$ and $x^3 - ax + b$, both of which can be resolved into factors.

The cubics considered here have a special form, in that the coefficient of x^2 is zero. It may appear that such a choice was motivated by the desire to subject the quadratics $x^2 \pm ax + b$ to a minimal modification but the reader may note that any cubic of the form $x^3 + px^2 + qx + r$ may be reduced to a cubic of the form $y^3 + ky + l$ where k and l depend on p, q and r, by changing the variable from x to $y - \frac{1}{3}p$.

PRITHWIJIT DE
Homi Bhabha Centre for Science Education,
Tata Institute of Fundamental Research,
Mumbai - 400088, India

10.1017/mag.2021.122
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105.41 Topology haiku matrix

	Searching for holes and voids	Metrics	Fine and coarse
Sometimes metrisable sometimes not	In homotopy we can quotient with great ease, as I search for voids.	In the Kansas plains we do move like an eagle, straight lines are enough.	There are but two sets: one HUGE and the other small The coarsest of all.
Spaces and points	Square, disk, triangle each its own unique space but basically a point.	and, in Manhattan we move block by block driving our geodesic.	The discrete is the topology of open points: all sets clopen.
Counter-intuitive but true!	A wedding ring is essentially a doughnut, But NOT to my wife!	Changing our metric allows us to make circles that look just like squares.	Topologies can be extreme, but excellent counterexamples!

JOSH HILLER
Adelphi University, One South Avenue,
Garden City, NY, 11053 USA
e-mail: *johiller@adelphi.edu*

10.1017/mag.2021.123
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105.42 Generalised binomial theorem via Laplace transform technique

Introduction

The binomial theorem is an important result which appears frequently in different areas of mathematics. It states that

$$(1 + t)^n = \sum_{k=0}^{n} \frac{n!}{k!\,(n-k)!}\, t^k,$$

where t is any real number and n is a non-negative integer.

https://doi.org/10.1017/mag.2021.123 Published online by Cambridge University Press