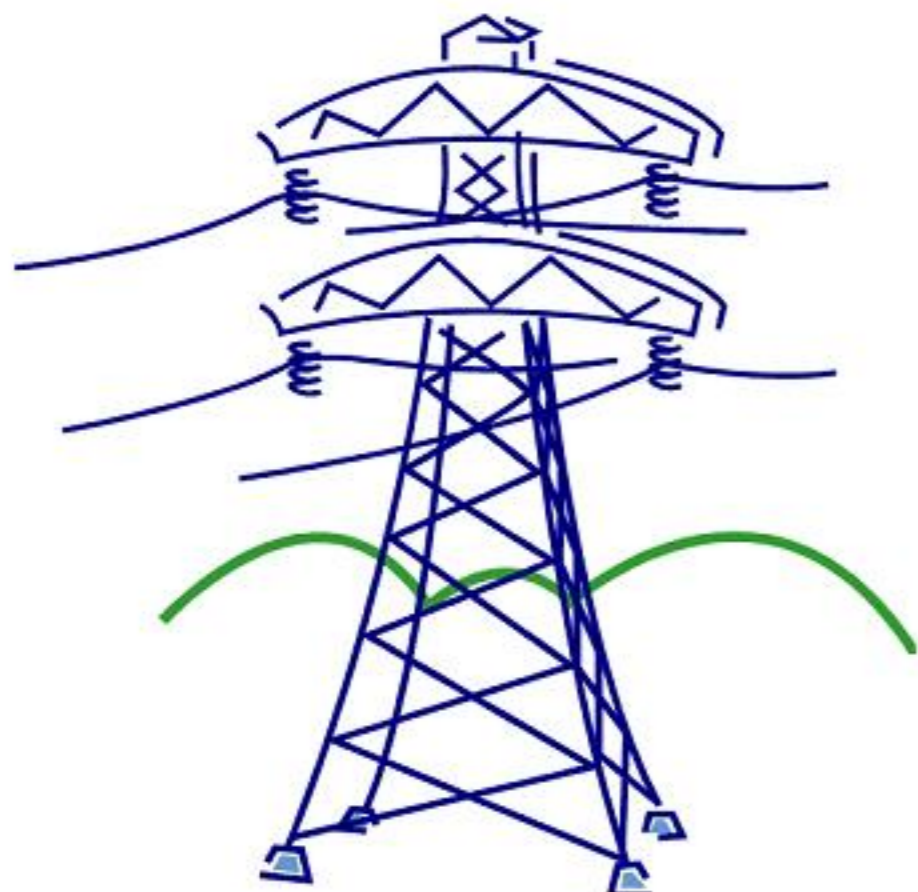


Power Mad!

Can you find convincing arguments that explain why all the statements below are true?



- 1) $2^1 + 3^1, 2^3 + 3^3, 2^5 + 3^5, \dots, 2^{99} + 3^{99}$
are all multiples of 5.
- 2) $1^{99} + 2^{99} + 3^{99} + 4^{99}$
is a multiple of 5.
- 3) $1^x + 2^x + 3^x + 4^x + 5^x$
is a multiple of 5 when x is odd.

Thousands more problems can be found on
the NRICH Maths website:

<http://nrich.maths.org>