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According to Wikipedia, the segment was inspired by the Twilight Zone episode “Little Girl Lost”. You can see the episode on YouTube.
Clicker Question

Have you ever seen a “Treehouse of Horror” episode?

A  Yes

B  No
One formula is
\[ e^{\pi i} = -1 \]
relating the numbers \( e \) and \( \pi \) together with the imaginary number \( i \). This formula was discovered by Euler in the 18th century.
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Another formula is

\[ P = NP \]

referring to one of the major unsolved problems of Computer Science. For more about this problem check out

The list of two-digit strings

46  72  69  6E  6B  20  72  75  6C  65  73  21

shows up. These two-digit strings represent hexadecimal numbers (base 16). Each character, letter, number, and punctuation, has an Ascii code and a hexadecimal equivalent. This string then translates into the message

Frink rules!

See www.asciitable.com for the conversion between hexadecimal numbers and Ascii code.
The equation

$$\rho_{mo} > \frac{3H_0^2}{8\pi G}$$

says that the density of matter is greater than the “critical density”, indicating that the universe will stop expanding and will eventually collapse upon itself. See


for more on this.
The equation

\[ 1782^{12} + 1841^{12} = 1922^{12} \]

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The Pythagorean theorem says that if \( a, b \) are the lengths of the shorter sides of a right triangle and if \( c \) is the hypothenuse, then

\[ c^2 = a^2 + b^2 \]
Fermat, whom we introduced when we discussed probability, said that the equation

\[ c^n = a^n + b^n \]

has no whole number solutions when \( n \) is a whole number at least 3. He said he found a marvelous proof, but the margin of his book in which he wrote the claim was too small to contain it. The intrigue this caused led this to be one of the most famous open problems in mathematics. Many people worked on the problem. Fermat himself wrote a proof for the case \( n = 4 \), and Euler came up with a proof for \( n = 3 \). However, it wasn’t until 1993 that a proof for the full result was found. This was done by Andrew Wiles.
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The equation

\[ 1782^{12} + 1841^{12} = 1922^{12} \]

is then false according to Fermat’s last theorem. If you try to verify this on a calculator showing no more than 8-10 digits, you won’t be able to tell that it is not correct.
However, knowing about odd and even numbers, and that raising an even number (resp. an odd number) to a power results in an even number (resp. an odd number) is enough to see this equation is false.
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For, in

\[1782^{12} + 1841^{12} = 1922^{12}\]

the right-hand size is even. The left-hand side is even plus odd, which is odd. Therefore, the equation cannot be true.
I’ll be here on Wednesday at 10:30, the start of the final exam period for this time slot, to return uncollected papers. There will be no class, so you are not required to come. However, if you want to pick up papers or if you have any questions, feel free to come by then.
Clicker Question

Watching Simpson’s videos can be useful to introduce or explore mathematical ideas.

A  I agree

B  I disagree

C  I don’t have an opinion