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Math_Questions_0047

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Brain Teaser Time!

Let 'x' and 'y' be two variables that are equal ($x=y$). From these two variables, I can prove that 2 is equal to 1:

steps

| | | |
|---|-------------------------|--------------------------------------|
| 1 | $x = y$ | Given. |
| 2 | $x*x = x*y$ | Left-multiply both sides by x |
| 3 | $x*x-y*y = x*y-y*y$ | Subtract ($y*y$) from both sides |
| 4 | $(x-y)*(x+y) = (x-y)*y$ | Factor ($x-y$) from both sides |
| 5 | $(x+y) = y$ | Cancel ($x-y$) from both sides |
| 6 | $(y+y) = y$ | Replace x with y (given, see line 1) |
| 7 | $2y = y$ | Simplify ($y+y$) to $2y$ |
| 8 | $2 = 1$ | Answer: 2 is equal to 1 |

What is wrong with this logic (besides that 2 is equal 1, that much is true!)? Name the step or steps and why it is wrong.

- Discuss how the integration of a function can be viewed as the limit of an infinite sum.
- Explain with example integration by parts.