

Re: how come calculus can be exact?

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"ashok" <arjdombivli@indiatimes.com> wrote in message
news:1dc813f.0409051006.f35afef@posting.google.com...

- > *How come calculus gives the exact results despite we are making*
- > *approximations(neglecting the infinitesimal which tends to zero) at*
- > *its basic definition level?*
- >
- > *I am getting very much frustated over it.*
- > *Can someone please convince me over the exclusion of the infinitesimal*
- > *terms from the definition and still getting the correct results.??*

You really need to study limits. For differentiation, an approximation based on a small value h becomes an exact solution when h tends to zero. You can substitute in actual values of .001 and smaller to see how the solution approaches the exact value. Ex. for $y = x^2$, calculate dy by using $x = 1$ and $x = 1.001$. From this calculate dy/dx as $.002001/.001 = 2.001$. As you decrease the difference to say $x = 1$ and $x = 1.0001$, the closer you get to the exact answer of 2.

PH