

[38r] My dear Lady Lovelace

I have added a note or two
to your papers.

As to the subject of continuity, it
must be as much as possible your
object now to remember while proving
the things which are true of continuity
to remember that they are not false
of [~~'conti'~~ crossed out?] dis continuous [*sic*] functions, be-
cause true of continuous ones. Thus,
you will afterwards see that

$$\varphi(a + h) = \varphi a + \varphi'(a + \theta h).h$$

is only an algebraical translation
of the following geometrical theorem

“Every continuous and ordinary arc
of a curve has somewhere a tangent
parallel to its chord”

[38v] [diagram in original]

But this is not always false
of discontinuous curves

[diagram in original]

Neither is the algebraical theorem
false of them.

The best way at present, is to
mark that discontinuous functions
are now excluded only because we
have no language to express them in.
This will come intime [*sic*] : you will
have enough of them when you
come to apply math^{cs} to the theory
of heat.

My wife has duly received
[39r] your letter & is much obliged to
you & Miss King.

Yours truly

ADeMorgan

69 G.S.

Feb^y 11/41 [?]