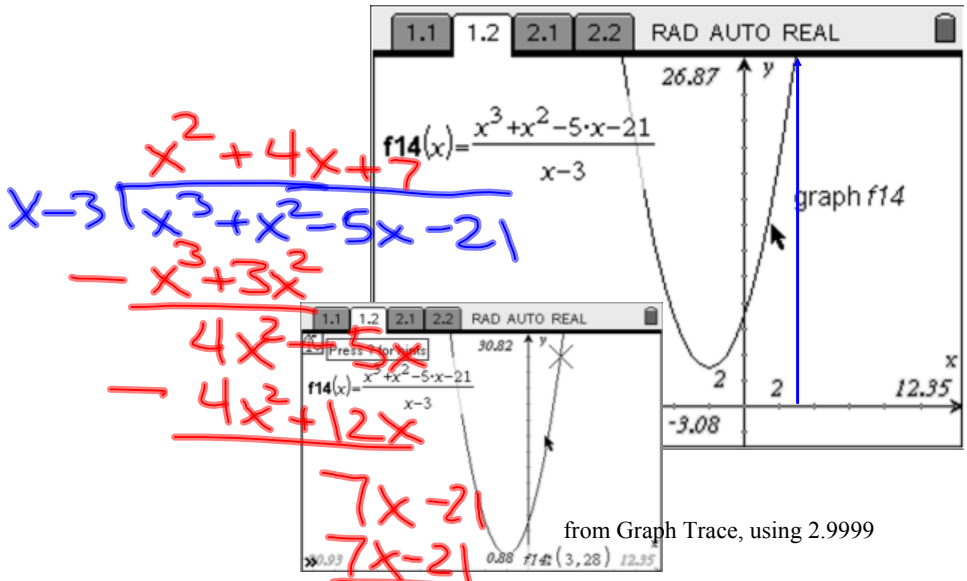
#14 from Foerster's text. Yes you can use synthetic division or your CAS, but her is a reminder of good ol' LONG DIVISION.



from Graph Trace, using 2.9999

x^2+4x+7

$x-3 \overline{)\, x^3+x^2-5x-21}$

$-(x^3-3x^2)$

$4x^2-5x$

$-(4x^2-12x)$

$7x-21$

$-(7x-21)$

0

$y = x^2+4x+7 \mid x \neq 3$

Prove $\lim_{x\to 3} f_{14}(x) = 28$

Step

$\lim_{x\to 3} x^2+4x+7$

$= \lim_{x\to 3} x^2 + \lim_{x\to 3} 4x + \lim_{x\to 3} 7$

$= \lim_{x\to 3} x^2 + 4\lim_{x\to 3} x + 7$

$= \lim_{x\to 3} x \cdot \lim_{x\to 3} x + 4(3)+7$

$= (3)(3) + 12+7$

$= 28$ Q.E.D.

Rationale

algebra (cancel) $x \neq 3$

Lim of Sum

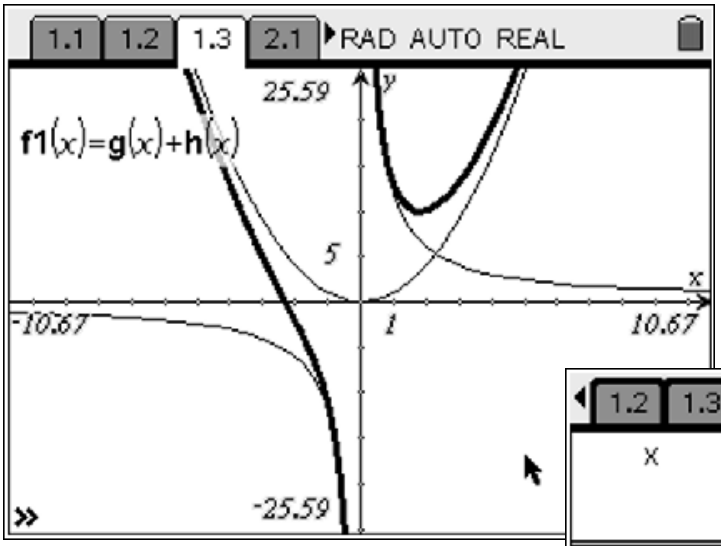
Lim of const times a fun

Lim of a constant

Lim of product

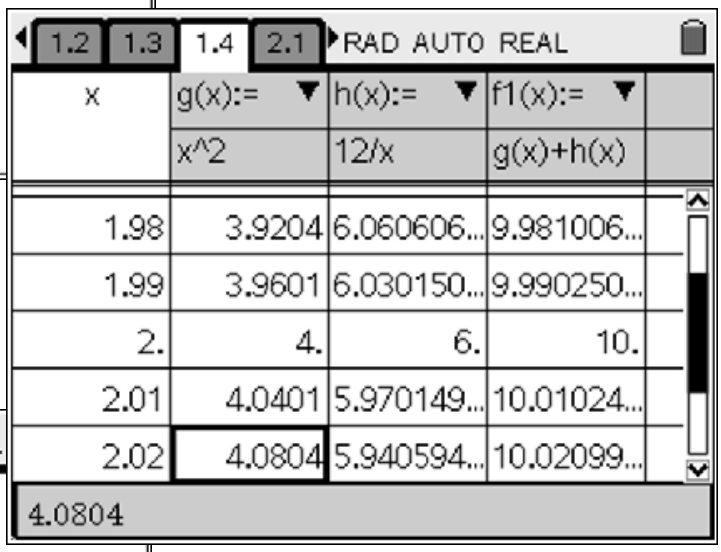
lim of identity

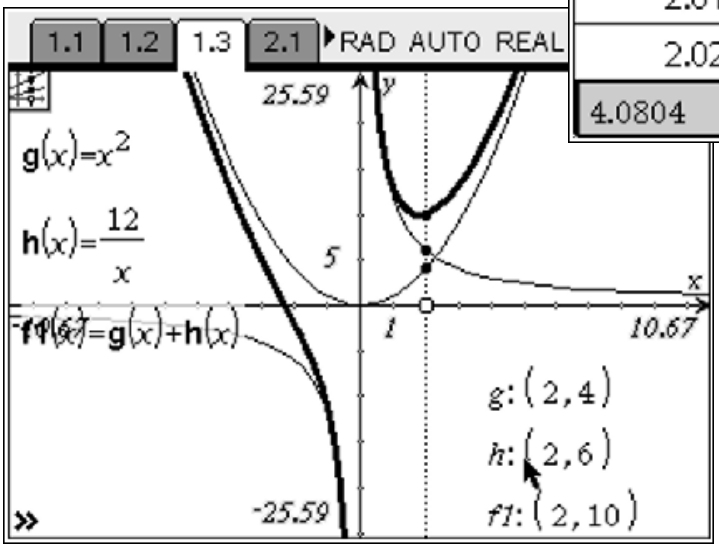
Lim of identity



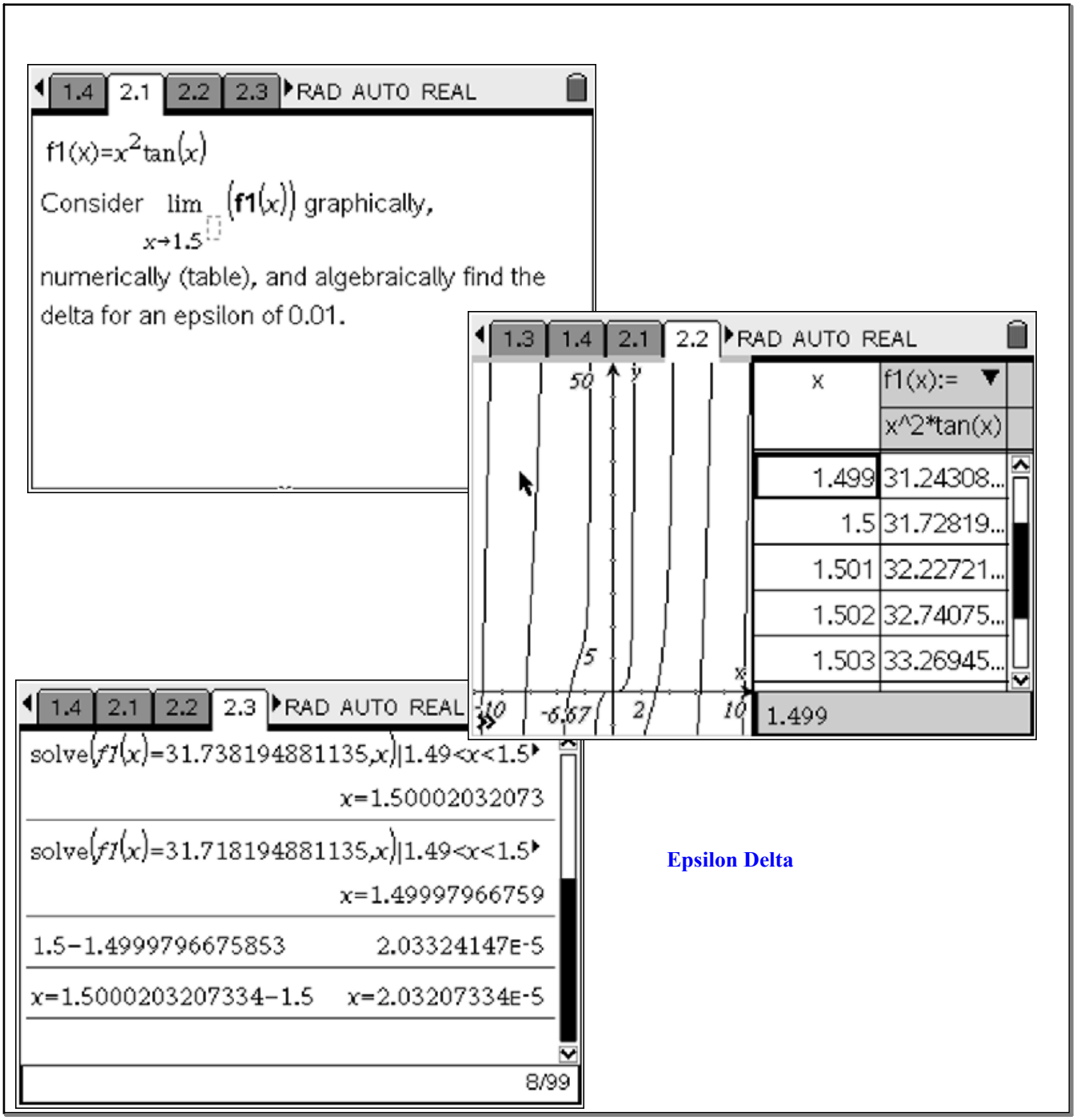
Let's graph and explore #1 & 5

with the TI-Nspire CAS





limit of a sum property



Epsilon Delta

Attachments

Sec2_3.tns