Sec 7.4 Limit Prop

Some prop limit middle life ↑

1. assume $\lim\limits_{x \to a} f(x) \lor \lim g(x) =$

   c is const

   1. Factor const out of L

   $$\lim c \, f(x) = c \lim_{x \to a} f(x)$$

2. $\lim\limits_{x \to a}$

   limit sum // take L individual part, then put back together with right sign

   $$\lim_{x \to a} [f(x) \pm g(x)] = \lim_{x \to a} f(x) \pm \lim_{x \to a} g(x)$$

3. netafie limit product ≃ lim sum ∨
   // take limit of piece ∨ put them together

   $$\lim [f(x) g(x)] = \lim f(x) \lim g(x)$$

4. limit in denom $\neq 0$. If denom $= 0$, div by $0 =$ error

→ 5. $\lim\limits_{x \to a} [f(x)]^n = [\lim\limits_{x \to a} f(x)]^n$

$n \in R$, if $\in Z^+ \Rightarrow$ extended
cases of 7.

7. $\lim\limits_{x \to a}$ lt of const is any constant,
Prog draw graph of c

$\lim\limits_{x \to a} c = c$

8. $\lim\limits_{x \to a} x = a$

able to continue, draw graph
of lim x

$\lim\limits_{x \to a} x^n = a^n$
special cases of prop 5.

$[\lim\limits_{x} x]^n = [\lim a]^2 = [a]^n$

note that all these prop also hold two
one sided limit.

$\lim\limits_{x \to -2} (3x^2 + 5x - 9$

$= \lim\limits_{x \to -2} 3 . \lim\limits_{x \to -2} x^2 + \lim\limits_{x \to -2} 5 . \lim\limits_{x \to -2} x - 9$

$= 3 . (-2)^2 + 5 . (-2) - 9$
$= 12 - 10 - 9 = -7$