

Thm Properties of Limits of Fns of 2 Vars
The following rules hold if $L, M,$ & k
are #'s &

$$\lim_{(x,y) \rightarrow (x_0,y_0)} f(x,y) = L \quad \& \quad \lim_{(x,y) \rightarrow (x_0,y_0)} g(x,y) = M$$

- 1) Sum Rule: $\lim_{(x,y) \rightarrow (x_0,y_0)} (f(x,y) + g(x,y)) = L + M$
- 2) Difference Rule: $\lim_{(x,y) \rightarrow (x_0,y_0)} (f(x,y) - g(x,y)) = L - M$
- 3) Product Rule: $\lim_{(x,y) \rightarrow (x_0,y_0)} (f(x,y) \cdot g(x,y)) = L \cdot M$
- 4) Constant Multiple Rule: $\lim_{(x,y) \rightarrow (x_0,y_0)} (k f(x,y)) = k L$
- 5) Quotient Rule: $\lim_{(x,y) \rightarrow (x_0,y_0)} \frac{f(x,y)}{g(x,y)} = \frac{L}{M} \quad (M \neq 0)$
- 6) Power Rule: If r & s are integers with no common factors & $s \neq 0$
 $\Rightarrow \lim_{(x,y) \rightarrow (x_0,y_0)} (f(x,y))^{r/s} = L^{r/s}$
(If s is even, we assume that $L > 0$)