

## PRODOTTO DI DUE FUNZIONI

| $\lim f(x)$ | $\lim g(x)$ | $\lim [f(x) \cdot g(x)]$ |
|-------------|-------------|--------------------------|
| $l \neq 0$  | $\infty$    | $\infty$                 |
| $\infty$    | $\infty$    | $\infty$                 |

FORMA INDETERMINATA  $0 \cdot \infty$

## QUOZIENTE DI DUE FUNZIONI

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| $\lim f(x)$ | $\lim g(x)$ | $\lim \frac{f(x)}{g(x)}$ |
|-------------|-------------|--------------------------|
| $l$         | $\infty$    | $0$                      |
| $\infty$    | $l, \neq 0$ | $\infty$                 |

FORME INDETERMINATE:  $\frac{0}{0}$ ;  $\frac{\infty}{\infty}$

$$\frac{0}{0} \rightarrow 0 \cdot \frac{1}{0} \rightarrow 0 \cdot \infty$$

$$\frac{\infty}{0} \rightarrow \infty \cdot \frac{1}{0} \rightarrow \infty \cdot \infty$$

## LOGARITMO DI UNA FUNZIONE $\log_a f(x)$ con $f(x) > 0$

| $0 < a < 1$ |                    | $a > 1$     |                    |
|-------------|--------------------|-------------|--------------------|
| $\lim f(x)$ | $\lim \log_a f(x)$ | $\lim f(x)$ | $\lim \log_a f(x)$ |
| 0           | $+\infty$          | 0           | $-\infty$          |
| $+\infty$   | $-\infty$          | $+\infty$   | $+\infty$          |

## ESPOENZIALE DI UNA FUNZIONE $a^{f(x)}$

| $0 < a < 1$ |                 | $a > 1$     |                 |
|-------------|-----------------|-------------|-----------------|
| $\lim f(x)$ | $\lim a^{f(x)}$ | $\lim f(x)$ | $\lim a^{f(x)}$ |
| $-\infty$   | $+\infty$       | $-\infty$   | 0               |
| $+\infty$   | 0               | $+\infty$   | $+\infty$       |

## ELEVAMENTO A POTENZA

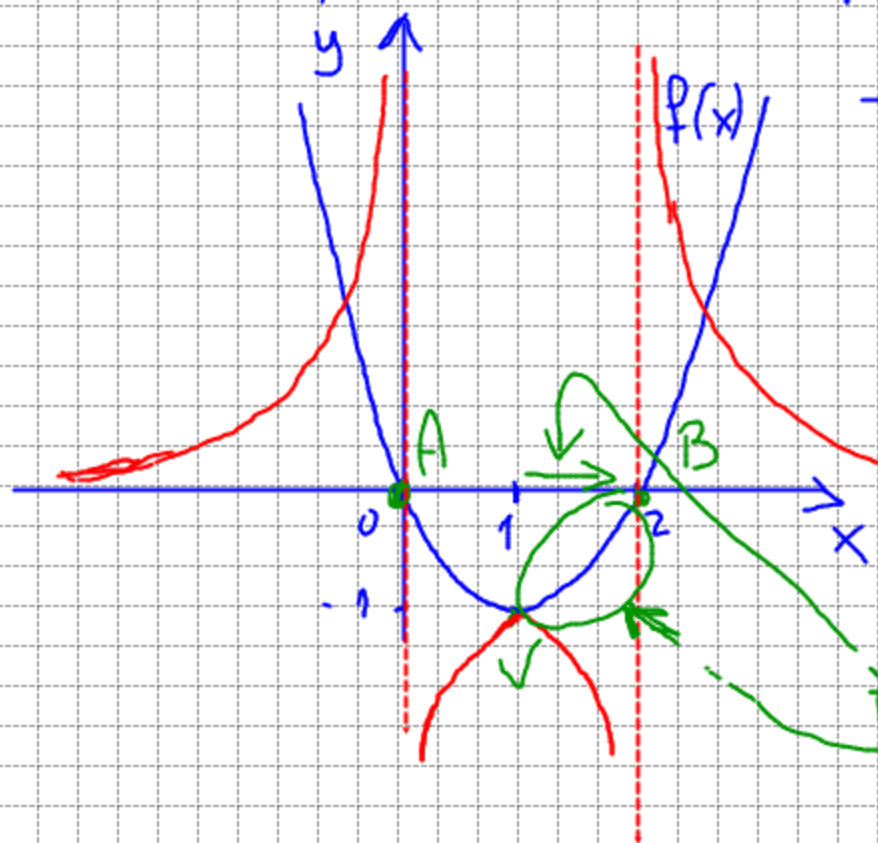
$$[f(x)]^{g(x)} = e^{g(x) \ln(f(x))}$$

| $\lim f(x)$ | $\lim g(x)$ | $\lim f(x)^{g(x)}$ |
|-------------|-------------|--------------------|
| $+\infty$   | $l_1 > 0$   | $+\infty$          |
| $+\infty$   | $l_1 < 0$   | 0                  |
| $0 < l < 1$ | $+\infty$   | 0                  |
| $l > 1$     | $+\infty$   | $+\infty$          |
| $0 < l < 1$ | $-\infty$   | $+\infty$          |
| $l > 1$     | $-\infty$   | 0                  |

FORME INDETERMINATE:  $0^0$ ;  $\infty^0$ ;  $1^\infty$

# ESEMPIO

$$y = \frac{1}{x^2 - 2x}$$



$$y = \frac{1}{f(x)} \quad f(x) = x^2 - 2x$$

| $x$        | $f(x)$     | $\frac{1}{f(x)}$ |
|------------|------------|------------------|
| $-\infty$  | $+\infty$  | 0                |
| $0^-$      | $0^+$      | $+\infty$        |
| $0^+$      | $0^-$      | $-\infty$        |
| $\nearrow$ | $\searrow$ | $\nearrow$       |
| 1          | -1         | -1               |
| $\nearrow$ | $\nearrow$ | $\searrow$       |
| $2^-$      | $0^-$      | $-\infty$        |
| $2^+$      | $0^+$      | $+\infty$        |