

# NOTION OF LIMIT

$$\lim_{x \rightarrow 0^+} \frac{1}{x}$$

what is  $f(x)$  "approaching" when  $x$  "approaches" zero from the right.

## NOTE

$$\frac{12}{4} = 3 \quad \text{because 3 is the only number that multiplied by 4 equals 12}$$

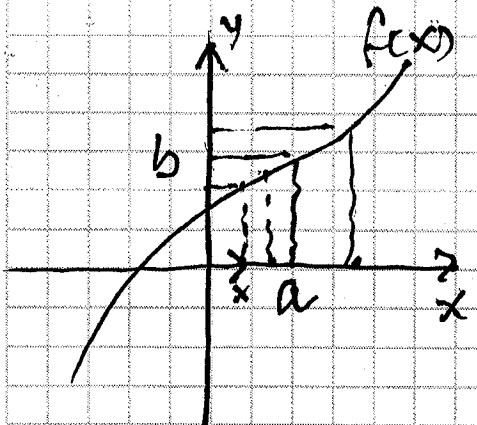
$$\frac{0}{4} = 0 \quad \text{because zero is the only number that multiplied by 4 equals 0}$$

$$\frac{12}{0} = \text{undefined} \quad \text{because there is no number that multiplied by zero equals 12}$$

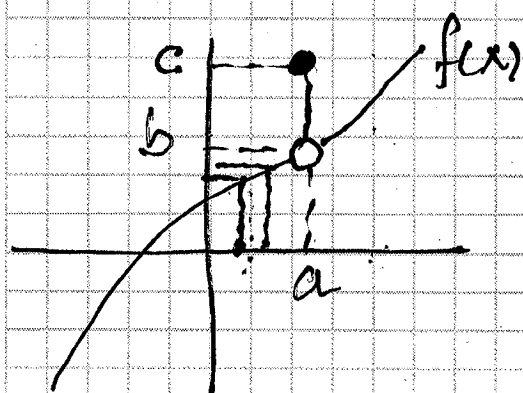
$$\frac{0}{0} = 0 \quad \frac{0}{0} = 3$$

$$\frac{0}{0} = \text{indetermination}$$

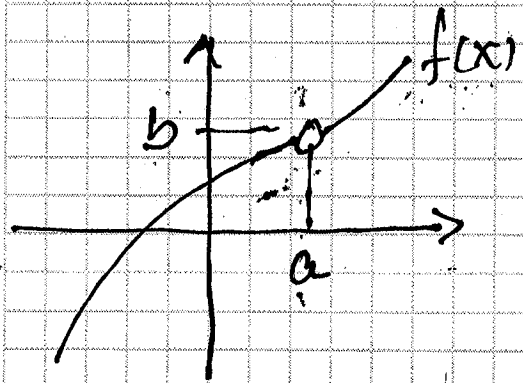
$$\frac{4}{0} = \text{undefined}$$



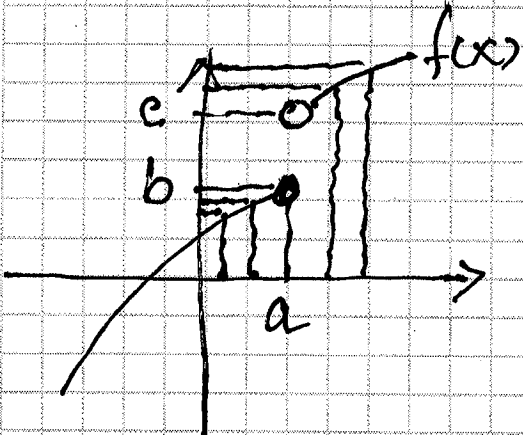
$$\lim_{x \rightarrow a} f(x) = b$$



$$\lim_{x \rightarrow a} f(x) = b$$



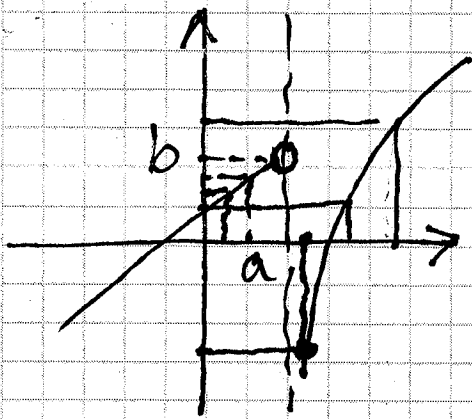
$$\lim_{x \rightarrow a} f(x) = b$$



$$\lim_{x \rightarrow a^-} f(x) = b$$

$$\lim_{x \rightarrow a^+} f(x) = c$$

$\lim_{x \rightarrow a} f(x)$  does not exist



$$\lim_{x \rightarrow a^-} f(x) = b$$

$$\lim_{x \rightarrow a^+} f(x) = -\infty$$

$-\infty$

$$\lim_{x \rightarrow a} f(x) \text{ d.n.e.}$$