

$$\sum_{k=1}^m k = \frac{m(m+1)}{2}$$

$$\sum_{k=0}^m q^k = \frac{1-q^{m+1}}{1-q}$$

ES

$$\sum_{k=5}^{10} (3+2k) = \sum_{k=5}^{10} 3 + 2 \sum_{k=5}^{10} k = 3 \cdot 6 + 2 \left(\sum_{k=1}^{10} k - \sum_{k=1}^4 k \right) = 3 \cdot 6 + \left(\frac{10 \cdot 11}{2} - \frac{4 \cdot 5}{2} \right)$$

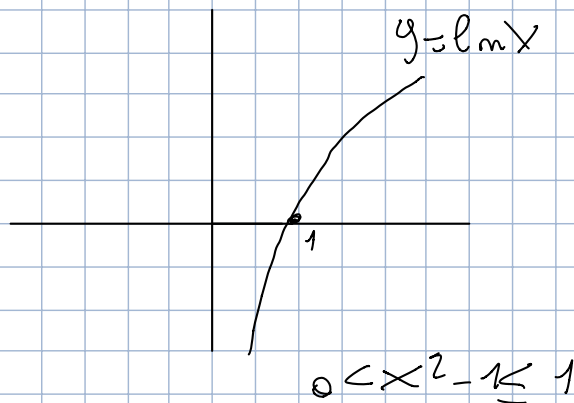
$$= 18 + 110 - 20 = 108$$

ES

$$C = \left\{ x \in \mathbb{R} \mid \ln(x^2 - 1) \leq 0 \right\} =$$

$$\ln(x^2 - 1) \leq 0 \quad (e^0 = 1)$$

$$\begin{aligned} \textcircled{1} & \begin{cases} x^2 - 1 > 0 \\ x^2 - 1 \leq 1 \end{cases} \\ \textcircled{2} & \end{aligned}$$



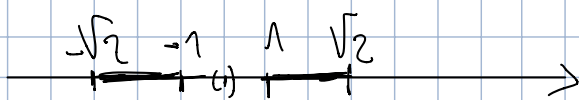
$$\textcircled{1} \begin{cases} x^2 > 1 & x^2 \leq 1 \\ x^2 \leq 2 & x^2 \leq 2 \end{cases}$$

$$\textcircled{2} \begin{cases} x^2 \leq 2 & x^2 \leq 2 \end{cases}$$

$$\begin{aligned} \textcircled{1} & \text{Number line from } -\sqrt{2} \text{ to } \sqrt{2} \text{ with points } -1, 1, -\sqrt{2}, \sqrt{2} \text{ marked.} \\ \textcircled{2} & \text{Number line from } -\sqrt{2} \text{ to } \sqrt{2} \text{ with points } -1, 1, -\sqrt{2}, \sqrt{2} \text{ marked.} \end{aligned}$$

$$C = [-\sqrt{2}; -1) \cup (1; \sqrt{2}]$$

• Punti di accumulazione



$$C' = [-\sqrt{2}, -1] \cup [1, \sqrt{2}]$$

• Inf e sup

$$\inf C = -\sqrt{2} = \min C$$

$$\sup C = \sqrt{2} = \max C$$

• Non contiene punti isolati

Determinare D_f (Dominio)

(A)

$$f(x) = \frac{\sqrt{1-x^2}}{\ln x}$$

(B)

$$f(x) = e^{\sqrt{\frac{x}{x-1}}}$$

(C)

$$f(x) = \frac{x^2+2}{\sqrt{x^2-1}}$$

(D)

$$f(x) = \ln \sqrt{x^2-4}$$

(A)

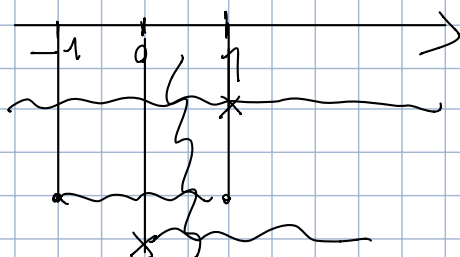
$$f(x) = \frac{\sqrt{1-x^2}}{\ln x} \quad \text{e.f.} \quad \ln x \neq 0 \quad x \neq 1$$

(N)

$$\begin{cases} 1-x^2 \geq 0 \\ x > 0 \end{cases} \quad -1 \leq x \leq 1$$

(D)

$$\begin{cases} x > 0 \end{cases} \quad x > 0$$

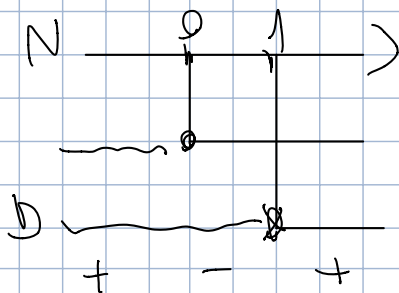


$$D_f(a; 1)$$

③

$$f(x) = e^{\frac{x}{x-1}}$$

$$\begin{cases} \frac{x}{x-1} \geq 0 \\ x-1 \neq 0 \end{cases}$$



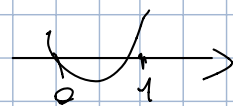
$$D_f(-\infty, 0] \cup (1, +\infty)$$

④

$$f(x) = \frac{x^2 + 2}{\sqrt{x^2 - x}}$$

$$\begin{cases} \sqrt{x^2 - x} \neq 0 \text{ si solve!} \\ x^2 - x \geq 0 \end{cases} \rightarrow$$

$$x^2 - x > 0$$



$$D_f(-\infty, 0) \cup (1, +\infty)$$

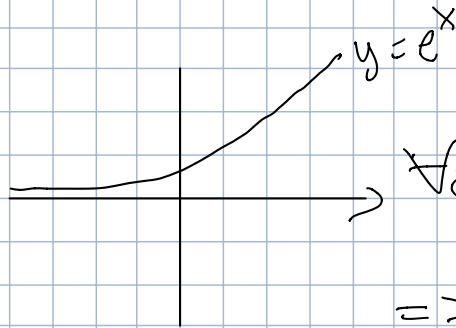
⑤

$$f(x) = \ln \sqrt{x^2 - 4}$$

$$\begin{cases} \sqrt{x^2 - 4} \geq 0 \\ x^2 - 4 \geq 0 \end{cases} \rightarrow \text{si solve!} \quad x^2 - 4 > 0$$

• Verifiziere die Grenzwerte

$$\lim_{x \rightarrow -\infty} e^x = 0$$



$$\forall \varepsilon > 0 \exists x_0 \mid \forall n < x_0 \Rightarrow$$

$$\Rightarrow |f(n) - l| < \varepsilon$$

$$l = 0$$