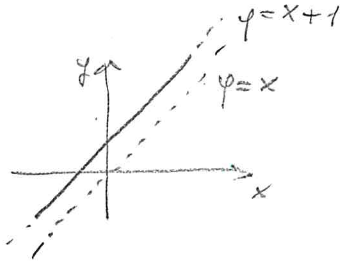
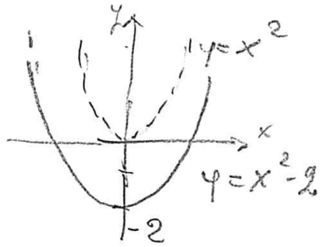
TROVARE IL DOMINIO DI UNA FUNZIONE

$f(x) = x + 1$ $D_f: \mathbb{R}$ funzione lineare (retta)



$f(x) = x^2 - 2$ $D_f: \mathbb{R}$ parabola



$$f(x) = \frac{x^3 - 2x + 1}{3} \qquad D_f: \mathbb{R}$$

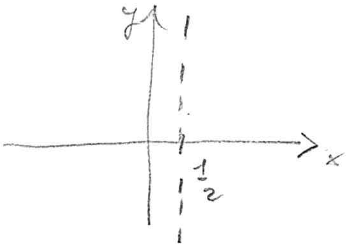
$$f(x) = \frac{x+1}{2x-1}$$

D_f: denominatore $\neq 0$

$2x - 1 \neq 0$

$2x \neq 1$

$x \neq \frac{1}{2}$



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

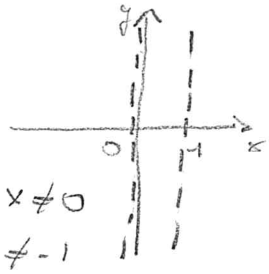
D_f: denomin $\neq 0$

$x - x^2 \neq 0$

$x(1-x) \neq 0 \Rightarrow x \neq 0 \wedge 1 - x \neq 0$

$-x \neq -1$

$x \neq 1$



$D_f: x \neq 0 \wedge x \neq 1$

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

D_f: denomin. $\neq 0$

$1 - x^2 \neq 0$

$-x^2 \neq -1$

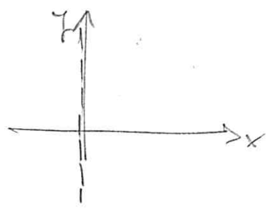
$x^2 \neq 1 \Rightarrow x \neq \pm\sqrt{1} \Rightarrow x \neq \pm 1$

$\Rightarrow x \neq 1 \wedge x \neq -1$

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

D_f: denomin $\neq 0$

$x^2 \neq 0 \quad x \neq 0$



IMPORTANTE

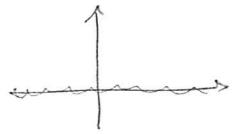
$$f(x) = \frac{2x+1}{x^2+1}$$

D_f: denomin $\neq 0$

$x^2 + 1 \neq 0$

$x^2 \neq -1 \quad x \neq \cancel{\pm\sqrt{-1}}$ sempre vero

$\Rightarrow$ CE: $\mathbb{R}$



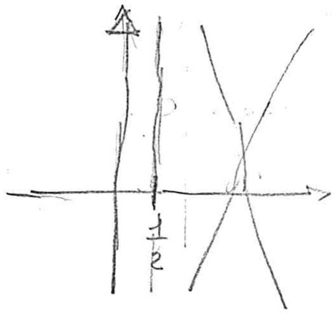
$f(x) = \sqrt{1-2x}$

Df: Radicando ≥ 0

$1-2x \geq 0$

$-2x \geq -1$ cambio segno e cambio verso

$\frac{\cancel{2}x}{\cancel{2}} \leq \frac{1}{2} \Rightarrow x \leq \frac{1}{2}$

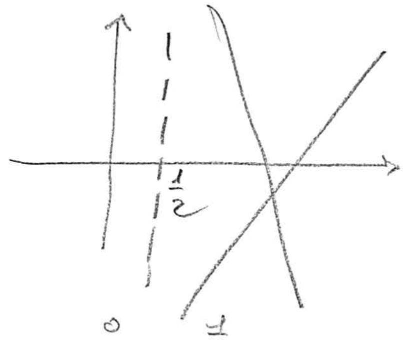


$f(x) = \frac{x}{\sqrt[4]{1-2x}}$

Df: $1-2x \cancel{\geq} > 0$ NO

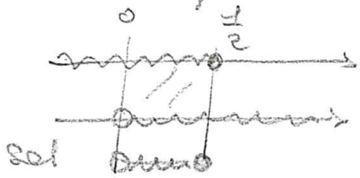
stessi passaggi dell'es. precedente

$x < \frac{1}{2}$

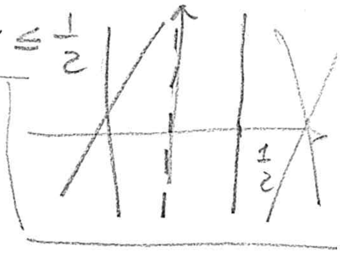


$f(x) = \frac{\sqrt[4]{1-2x}}{\sqrt{3x}}$

Df: $\begin{cases} 1-2x \geq 0 \\ \frac{\cancel{3}x}{\cancel{3}} > \frac{0}{3} \end{cases} \Rightarrow \begin{cases} x \leq \frac{1}{2} \\ x > 0 \end{cases}$



Df: $0 < x \leq \frac{1}{2}$



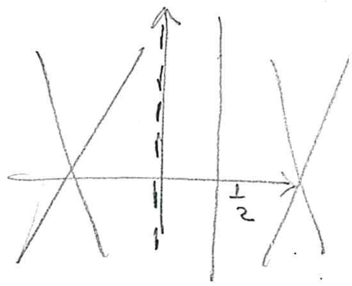
$f(x) = \sqrt[6]{\frac{1-2x}{3x}}$

Df: $\begin{cases} \frac{1-2x}{2x} \geq 0 \\ \cancel{x \neq 0} \end{cases} \Rightarrow$ $N \geq 0$ $1-2x \geq 0$ $x \leq \frac{1}{2}$

$D > 0$ $2x > 0$ $x > 0$

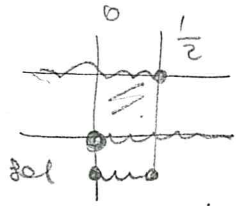
		0		1/2	
N	+		+	•	−
D	−	∘	+		+
N/D	−	∘	+	•	−

Df: $0 < x \leq \frac{1}{2}$



$f(x) = \sqrt[4]{1-2x} - 4x\sqrt{3x}$

Df: $\begin{cases} 1-2x \geq 0 \\ 3x \geq 0 \end{cases}$ $\begin{cases} x \leq \frac{1}{2} \\ x \geq 0 \end{cases}$



CS $0 \leq x \leq \frac{1}{2}$

$f(x) = \sqrt[8]{1-2x} - \frac{4x}{\sqrt[12]{3x}}$ Df: $\begin{cases} 1-2x \geq 0 \\ x > 0 \end{cases}$ $\begin{cases} x \leq \frac{1}{2} \\ x > 0 \end{cases}$ $0 < x \leq \frac{1}{2}$

$$f(x) = \sqrt{1-x^2} \qquad D_f\ 1-x^2 \geq 0$$

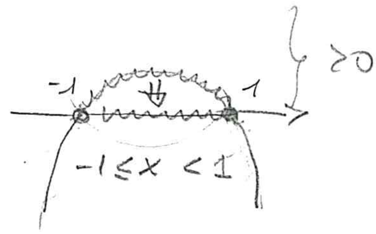
PARABOLA $\Rightarrow 1-x^2=0$

$f(x)=-x^2+1$

$-x^2=-1$

$x^2=1$

$x=\pm 1$



$D_f:\ -1 \leq x < 1$

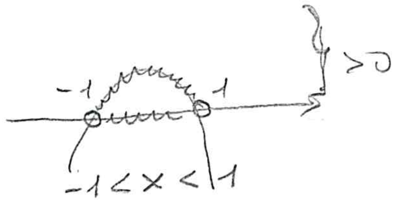
$[-1; 1[$

$$f(x) = \frac{2x}{\sqrt{1-x^2}} \qquad D_f:\ 1-x^2 > 0$$

PARABOLA

$f(x)=-x^2+1$

stessi passaggi dell'es. precedente



$D_f:\ -1<x<1$

$]-1; 1[$

$$f(x) = \frac{\sqrt{x^2-x}}{\sqrt{1-x^2}} \qquad D_f: \begin{cases} ① \ x^2-x \geq 0 \\ ② \ 1-x^2 > 0 \end{cases}$$

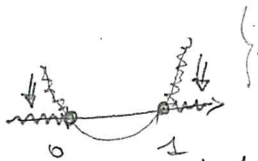
① PARABOLA

$f(x)=x^2-x$

$x^2-x=0$

$x(x-1)=0$

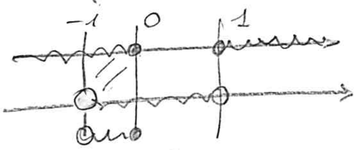
$x=0 \ \vee \ x=1$



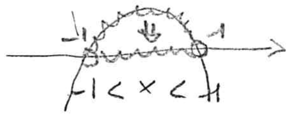
$x \leq 0 \ \vee \ x \geq 1$

$\Downarrow$

$$\begin{cases} x \leq 0 \ \vee \ x \geq 1 \\ -1 < x < 1 \end{cases}$$



② come negli es. precedenti è una parabola $f(x)=-x^2+1$



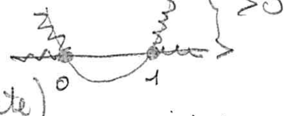
$D_f:\ -1 < x \leq 0$

$]-1; 0]$

$$f(x) = \sqrt{\frac{x^2-x}{1-x^2}} \qquad D_f:\ \frac{x^2-x}{1-x^2} \geq 0$$

$N \geq 0 \quad x^2-x \geq 0$

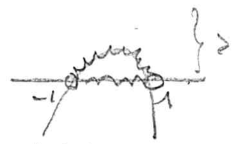
(v. es. precedente)



$x \leq 0 \ \vee \ x \geq 1$

$D > 0 \quad 1-x^2 > 0$

(v. es. precedente)



$-1 < x < 1$

	-1		0		1	
N	+		+	−		+
D	−		+	+		−
N/D	−		+	−		−

$D_f:\ -1 < x \leq 0$

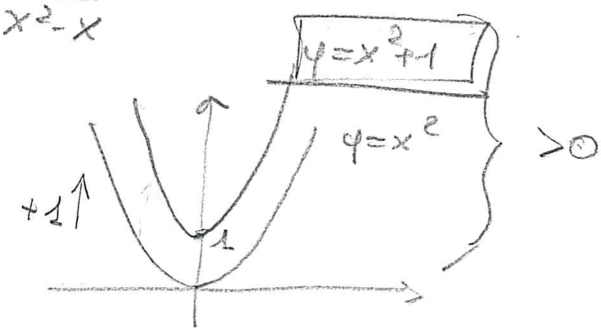
$]-1; 0]$

$f(x) = \sqrt{1-x^2} + \frac{2x}{\sqrt{x^2-x}}$ $\quad D_f:$ $\begin{cases} 1-x^2 \geq 0 \\ x^2-x>0 \end{cases}$

come nell'esercizio con $y = \frac{\sqrt{1-x^2}}{\sqrt{x^2-x}}$

$f(x) = \sqrt{x^2+1}$ $\quad D_f:$ $x^2+1 \geq 0$

$\forall x \in \mathbb{R}$



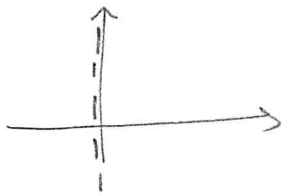
$f(x) = \sqrt[3]{1-x}$ $\qquad D_f: \forall x \in \mathbb{R}$

$f(x) = \dfrac{1}{\sqrt[3]{1-x}}$ $\qquad D_f: \quad 1-x \neq 0$

$-x \neq -1$

$x \neq 1$

$f(x) = \dfrac{\sqrt[3]{1-x}}{\sqrt[3]{x^2}}$ $\qquad D_f: x^2 \neq 0 \quad x \neq 0$



$f(x) = \sqrt[3]{\dfrac{1-x}{x^2}}$ $\qquad D_f: x^2 \neq 0 \quad x \neq 0$

$f(x) = \sqrt{x} - \dfrac{4}{\sqrt[3]{x}}$ $\qquad D_f: \begin{cases} x \geq 0 \\ x \neq 0 \end{cases} \Rightarrow x > 0$