

$$c) f(x) = \sqrt{(x-1)(x-5)}$$

$$\text{conditions } (x-1)(x-5) \geq 0$$

Déterminons le tableau des signes $(x-1)(x-5)$

x	$-\infty$	1	5	$+\infty$	
$(x-1)(x-5)$	+	0	-	0	+

parabole



$$ED(f) =]-\infty; 1] \cup [5; +\infty[$$

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$$d) f(x) = \frac{\sqrt{6-2x}}{x^2-5x+4}$$

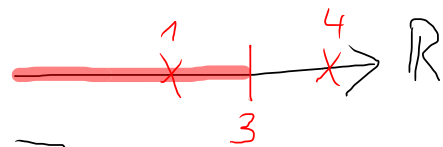
$$\text{Conditions: } 1) \ 6-2x \geq 0$$

$$2) \ x^2-5x+4 \neq 0$$

$$1) \ \begin{array}{l} 6 \geq 2x \\ 2x \leq 6 \\ \underline{x \leq 3} \end{array} \quad \left| \begin{array}{l} \Leftrightarrow \\ \div 2 \end{array} \right.$$

$$2) \ \begin{array}{l} x^2-5x+4=0 \\ (x-1)(x-4)=0 \\ \downarrow \quad \downarrow \\ x=1 \quad x=4 \end{array}$$

$$\text{Donc: } \underline{x \neq 1; x \neq 4}$$



$$ED =]-\infty; 1[\cup]1; 3[$$

beau 😊

$$=]-\infty; 3[- \{1\}$$

moche 😞

2.2.3 Déterminer l'ensemble de définition des fonctions suivantes :

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

b) $f(x) = \sqrt{x-1}\sqrt{x-5}$

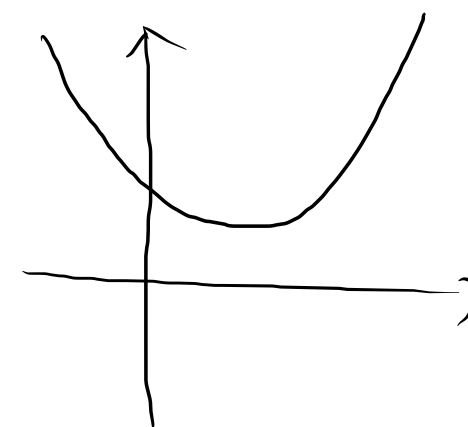
a) $\underbrace{x^2 + x + 1}_{p(x)} \geq 0$

$p(x) = 0$

\Leftrightarrow

$x^2 + x + 1 = 0$

$\Delta = 1 - 4 = -3 < 0$



$ED(f) = \mathbb{R}$

b) $\begin{cases} x-1 \geq 0 \\ x-5 \geq 0 \end{cases}$

\Leftrightarrow

$\begin{cases} x \geq 1 \\ x \geq 5 \end{cases}$

$ED(f) = [5; \infty[$

$$e) f(x) = \sqrt{\frac{x+1}{x-4}}$$

$$f) f(x) = \frac{x^2 + 7x}{\sqrt{1-x^2}}$$

e) Signe de $\frac{x+1}{x-4}$:

x	$-\infty$	-1	4	$+\infty$
$\frac{x+1}{x-4}$		+	-	+

(Note: In the original image, a green circle is drawn around the '+' sign at x = -1, and a green arrow points to the vertical line at x = 4.)

$$ED(f) =]-\infty; -1] \cup]4; +\infty[$$

f) conditions: $1-x^2 > 0$
 $(1-x)(1+x) > 0$

Signe de $(1-x)(1+x)$:

x	-1	1
$(1-x)(1+x)$	-	+ -

$$ED(f) =]-1; 1[$$