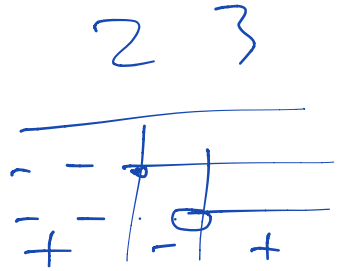
$$\sqrt{\frac{x-2}{x-3}} + \sqrt{\frac{1-x}{x+5}}$$

$$\begin{cases} \frac{x-2}{x-3} \geq 0 \\ \frac{1-x}{x+5} \geq 0 \end{cases}$$

I) $N \geq 0 \quad x \geq 2$

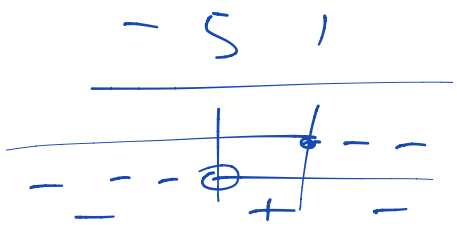
$D > 0 \quad x > 3$



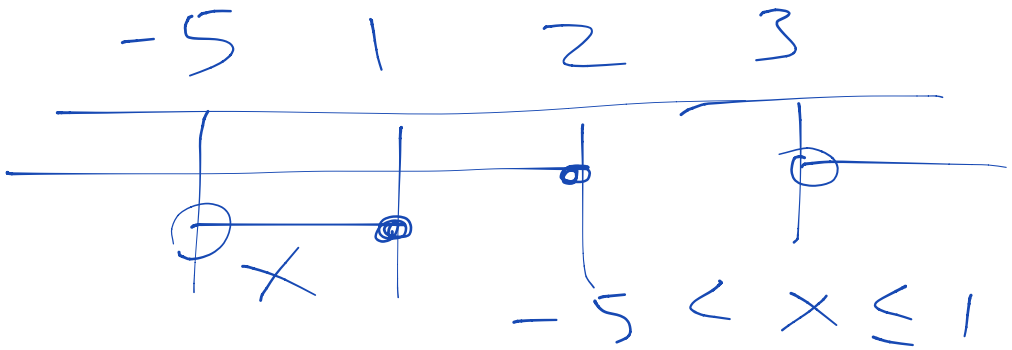
$x \leq 2 \vee x > 3$

II) $N \geq 0 \quad x \leq 1$

$D > 0 \quad x > -5$



$-5 < x \leq 1$



$-5 < x \leq 1$

$$\sqrt[6]{2^3} = \sqrt{2}$$

$$\sqrt[6]{a^2} = \sqrt[3]{|a|}$$

$$\sqrt[8]{a^2} = \sqrt[4]{|a|}$$

Riduzione allo stesso indice

$$\sqrt[3]{2^4} \qquad \sqrt[2]{2^1} \qquad \sqrt[5]{2^3}$$

$$\sqrt[n\cancel{R}]{a^{m\cancel{R}}} = \sqrt[n]{a^m}$$

$\Longleftrightarrow$

$\sqrt[30]{2^{40}}$ $\sqrt[30]{2^{15}}$ $\sqrt[30]{2^{18}}$

$\sqrt{(x+1)^5}$ $\sqrt[3]{(x+3)^2}$ $\sqrt[4]{x-1}$

$\sqrt[12]{(x+1)^{30}}$ $\sqrt[12]{(x+3)^8}$ $\sqrt[12]{(x-1)^3}$

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$\sqrt[12]{\quad\quad\sqrt[3]{x-1}}$

Moltiplicazione

$$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$$

$$\sqrt[3]{a^3b^2} \cdot \sqrt{ab^4} =$$

$$= \sqrt[6]{a^{6}b^{4} \cdot a^{3}b^{12}} =$$

$$= \sqrt[6]{a^{9}b^{16}}$$

Divisione

$$\sqrt[n]{a} : \sqrt[n]{b} = \sqrt[n]{a:b}$$

$$\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$$

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

$$= \sqrt[12]{\frac{(x-1)^9}{(x-2)^3} \cdot \frac{(x-2)^{12}}{(x-1)^8}} =$$

$$= \sqrt[12]{(x-1)(x-2)^9}$$

$$\sqrt[12]{(5-x)^4} = \quad C.E. = \mathbb{R}$$

$$= \sqrt[3]{|5-x|}$$

$$\sqrt[6]{16a^2+24a+9} = \sqrt[6]{(4a+3)^2} =$$

$$= \sqrt[3]{|4a+3|}$$

$$\sqrt[8]{(4a+3)^2} = \sqrt[4]{|4a+3|}$$

$$\sqrt[9]{x^3(a-1)^3} = \sqrt[3]{x(a-1)}$$

$$\sqrt[3]{x^3+a^3} \neq x+a$$

$$\sqrt[6]{36a^2x^6} = \sqrt[6]{6^2a^2x^6} = \sqrt[3]{|6ax^3|}$$

$$\sqrt[6]{\frac{x}{y^3}} \cdot \sqrt{\frac{xy+y^2}{x-y}} \cdot \sqrt[3]{\frac{x-y}{x^2+xy}} =$$

$$= \sqrt[6]{\frac{x}{y^3}} \cdot \sqrt{\frac{y(x+y)}{x-y}} \cdot \sqrt[3]{\frac{x-y}{x(x+y)}} =$$

$$= \sqrt[6]{\frac{\cancel{x}}{\cancel{y^3}} \cdot \frac{\cancel{y^3}(x+y)^{\cancel{3}}}{(x-y)^{\cancel{3}}} \cdot \frac{\cancel{(x-y)^2}}{x^{\cancel{2}}\cancel{(x+y)^2}}} =$$

$$= \sqrt[6]{\frac{x+y}{x(x-y)}}$$

Portare dentro

$$3\sqrt[4]{3} = \sqrt[4]{3^4 \cdot 3} = \sqrt[4]{3^5}$$

$$\sqrt[4]{3^4 \cdot 3} = \sqrt[4]{3^4} \cdot \sqrt[4]{3} = 3\sqrt[4]{3}$$

$$a^2\sqrt[4]{a} = \sqrt[4]{a^8 a} = \sqrt[4]{a^9}$$

$$(-2)^3\sqrt[4]{2} = -\sqrt[4]{2^{12} \cdot 2} = -\sqrt[4]{2^{13}}$$

$$\sqrt[5]{a^{18}} = \sqrt[5]{a^3 a^{15}} =$$

$$= \sqrt[5]{a^3} \cdot \sqrt[5]{a^{15}} = a^3 \sqrt[5]{a^3}$$

$$\begin{array}{r|l} 18 & 5 \\ \hline 3 & 3 \end{array}$$