$f(x) = \frac{x^3}{x^2-4}$

$x^2 - 4 \neq 0$

$x^2 = 4$

$x \neq 2 \lor x \neq -2$

$$x^3 : x^2 - 4 = x$$
$$-x^3 + 4x$$
$$= 4x$$

$\cancel{x(x^2-4)} + 4x$ / x^2-4 $\quad x\left(\frac{4x}{x^2-4}\right)$

$\frac{x^3}{x^2-4} \quad x + \left(\frac{4x}{x^2-4}\right)$

a) $\frac{x}{(x+1)(x+2)(x-3)}$,

Grad > 2

Kalv > 1

$x \neq -1$

$x \neq -2$

$x \neq 3$

$D = \mathbb{R} - \{-2, -1, 3\}$

$\frac{x}{(x+1)(x+2)(x-3)} \quad \frac{A}{x+1} + \frac{B}{x+2} + \frac{C}{x-3}$

$$\frac{x}{\cancel{(x-3)(x+1)(x+2)}} = \frac{A(x-3)(x+2) + B(x+1)(x-3) + C(x+1)(x+2)}{\cancel{(x+1)(x+2)(x-3)}}$$

$x = A(x^2+2x-3x-6) + B(x^2-3x+x-3) + C(x^2+2x+x+2)$

$x = Ax^2 - Ax - A6 + Bx^2 - B2x - B3 + Cx^2 + C3x + C2$

$x = x^2(A+B+C) + x(-A-2B+3C) - 6A - 3B + 2C$

$A + B + C = 0 \qquad C = -A - B$

$-A - 2B + 3C = 1 \qquad -3A - A - 2B - 3B = 1$

$-6A - 3B + 2C = 0 \qquad -4A - 5B = 1$

$$(x+1)^2 \qquad \frac{A}{x+1}+\frac{B}{(x+1)^2}$$

$$(x^2+x+2) \qquad \frac{Ax+B}{x^2+x+2}$$

b) $\frac{1}{x^2-3x+2}$,

$$\frac{1}{x^2-3x+2}=\frac{A}{(x-1)}+\frac{B}{(x-2)}$$

$$\Delta = 9-4\cdot 2\cdot 1 = 1$$

$$x_1=\frac{3-1}{2}=1$$

$$x_2=\frac{3+1}{2}=2$$

$$Ax-2A+Bx-B$$

$$x(A+B)-2A-B$$

$$-2A-B=1$$

$$A+B=0$$

$$A=-B$$

$$+2B-B=1$$

$$\underline{\underline{B=1 \wedge A=-1}}$$

$$\boxed{-2(-B)-B}$$

$$-2A-A=1$$

$$-A=1$$

$$A=-1$$

$$\frac{1}{x-1}+\frac{-1}{x-2}=\frac{1}{x^2-3x+2}$$

f) $\frac{x^2+4x+6}{x+4} > 3,$

$\frac{x^2+4x+6}{x+4}$ $\quad$ $\frac{x^2+4x+6-3x-12}{x+4} > 0$

$D \in R - \{-4\}$

BRUH

$\frac{x^2+x-6}{x+4} > 0$ $\quad$ $(x+4)(x^2+x-6) > 0$

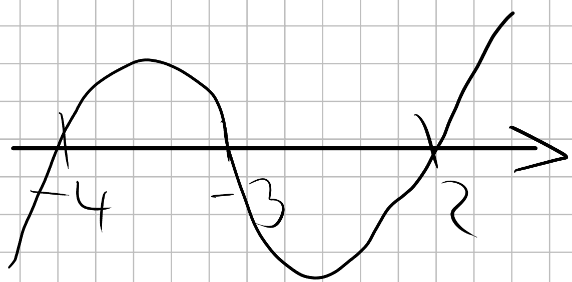
x^2+x-6

$\Delta = 1-4\cdot 1\cdot -6 = 25$

$\frac{-1+5}{2} = 2$

$\frac{-1-5}{2} = -3$

$(x+4)(x+3)(x-2) > 0$



$x \in (-4,-3) \cup (2,\infty)$

c) $\frac{1}{2-x}+\frac{1}{2+x} < 1,$

$\frac{2+\cancel{x}+2-\cancel{x}-(2-x)(2+x)}{(2-x)(2+x)} < 0$

$D = R - \{-2, 2\}$

$\cancel{4}\,4-x^2$

$(2-x)(2+x)-x^2 < 0$

$4-x^2-x^2 < 0$

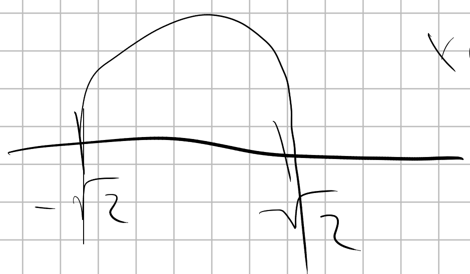
$4-2x^2 < 0$ $\quad$ $2-x^2 < 0$

$(\sqrt{2}-x)(\sqrt{2}+x)$ $\qquad$ $x^2>2$

$x=\sqrt{2}$ $\quad$ $x=-\sqrt{2}$

$x>\sqrt{2} \vee x<-\sqrt{2}$

$x\in(-\infty,-\sqrt{2})\cup(\sqrt{2},\infty)$



a) $\dfrac{x^5-x^3+1}{x(x+1)^3(x^2-1)^2}$,

$x(x+1)^3(x-1)(x-1)\underline{(x+1)(x+1)}$

$x(x+1)^5(x-1)^2$

$\frac{A}{x}+\frac{B}{x+1}+\frac{C}{(x+1)^2}+\frac{D}{(x+1)^3}+\frac{E}{(x+1)^4}+\frac{E}{(x+1)^5}+\frac{G}{(x-1)}+\frac{H}{(x-1)^2}$

ZADANIE 16. Dana jest funkcja określona wzorem $f(x)=\frac{1}{x}$. Rozwiązać nierówności:

$$f(x)-f\left(\frac{1}{x}\right)<f(x^3)-f\left(\frac{1}{x^3}\right).$$

czw 16:30

$\frac{1}{x}-x<\frac{1}{x^3}-x^3$

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