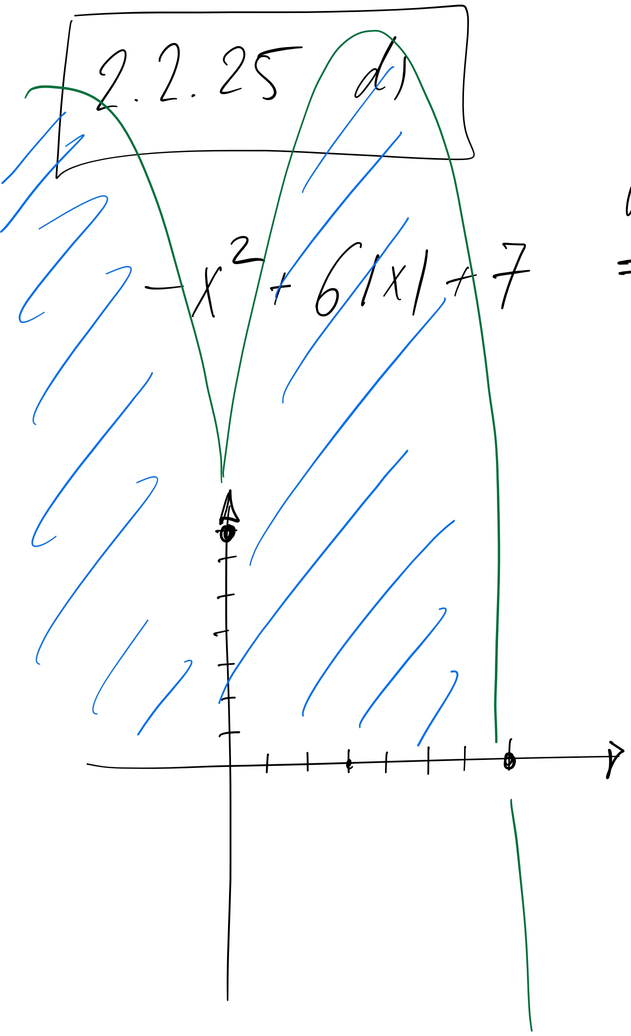


2.2.25 d)

$$-x^2+6|x|+7 \overset{\text{déf}}{=} \begin{cases} \boxed{-x^2+6x+7} & \text{si } x \geq 0 \\ \boxed{-x^2-6x+7} & \text{si } x < 0 \end{cases}$$

$$x^2-6x-7 = (x-7)(x+1) = 0$$

$$x^2+6x-7 = (x+7)(x-1) = 0$$

$2 \cdot \int_0^7 (-x^2+6x+7)\,dx$ donne l'aire cherchée

$\boxed{2.2.25 \text{ a)}}$

$D_2 = \{\pm 1;\ \pm 2\}$

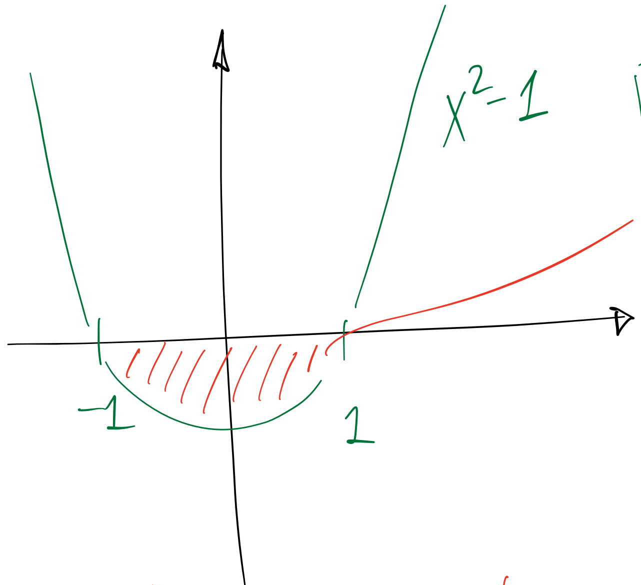
$$x^3 - 2x^2 - x + 2 = (x - a) \cdot g(x)$$

$a \in D_2$

$$\begin{array}{c|cccc}
 & 1 & -2 & -1 & 2 \\
a & & a \cdot 1 & & \\
\hline
 & 1 & & \cdot a & \cdot a
\end{array}$$

$$\int c \cdot h(x)\,dx = c \cdot \int h(x)\,dx$$

vu que $c \in \mathbb{R}$



$$\boxed{\int_{-1}^{1} (x^2-1)\,dx} < 0$$

Aire algébrique $\in \mathbb{R}$

$$\left|\int_{-1}^{1} (x^2-1)\,dx\right| \geq 0$$

Aire géométrique

$$\int_{-1}^{1} (x^2-1)\,dx = \left.\frac{1}{3}x^3 - x\right|_{-1}^{1} = \left(\frac{1}{3}-1\right) - \left(\frac{-1}{3}+1\right)$$

$$= -\frac{2}{3} - \frac{2}{3} = -\frac{4}{3}$$

$\Rightarrow$ l'aire du domaine hachuré en rouge vaut $\frac{4}{3}$

car $\left|\int_{-1}^{1} (x^2-1)\,dx\right| = \left|-\frac{4}{3}\right| = \frac{4}{3}$

$$\int_1^{+\infty} \frac{1}{x^2}\,dx = \lim_{c\to+\infty}\left(-\frac{1}{x}\Big|_1^c\right) = \lim_{c\to+\infty}\left(-\frac{1}{c}+1\right)$$

$$= 0^- + 1 = 1$$

$$-\frac{1}{c} \xrightarrow{c\to+\infty} 0^-$$