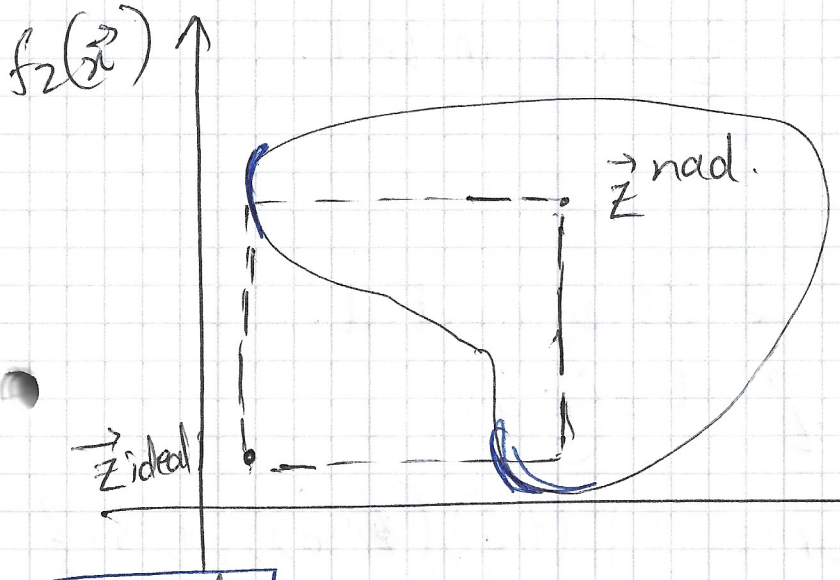
Assignment #2

2.1

weak PO - For a $\vec{x}^* \in S$ is weakly PO if there does not exist another $\vec{x} \in S$. $| f_i(\vec{x}) < f_i(\vec{x}^*)$ $\forall i = 1, \dots, m$ is not fulfilled.

2.2

$\vec{z}^{nad}$ & $\vec{z}^{ideal}$ are ranges of the PO set.
(Approx.) (ideal)



worst f_1, best f_2
best f_1, worst f_2

$\vec{z}^{ideal}$ → non-existent solution,
- used as a ref solution to find PO solutions.
- lower bound of each objective.

$\vec{z}^{nadir}$ → represents the upper bound of each objective.

2.3.

1). f_1 → minimized , f_2 → minimized.

$\{(2,4), (3,3), (4,2)\}$

2). f_1 → minimized, f_2 → maximized.

$\{(1,6), (3,7)\}$

3). f_1 → maximized, f_2 → minimized.

$\{(6,1), (9,2), (11,3)\}$

4). f_1 → maximized, f_2 → maximized.

$\{(5,6), (9,6)\}$.

- sets are concave & disconnected.
- $\vec{z}^{ideal} = (4,2)$, $\vec{z}^{nad} = (6,9)$.
- Weak-Pareto dominance : $\{(1,6), (9,6), (11,3)\}$