

2024-9-24

①

buy house

objective

space

[price]

[age]

migration time

energy efficiency

$\min_x f(x)$

constraints

location $\in \{\text{Delhi, The Hague}\}$

$$10000000 \leq \text{price} \leq 50000000 \text{ €}$$

$$2 \leq \text{age} \leq 10$$

$$\# \text{bedrooms} = 5$$

$$g(x) \leq 0$$

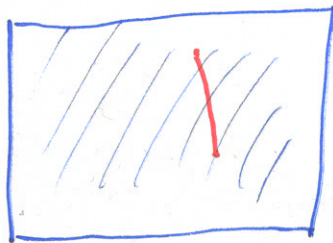
$$\text{price} - 50000000 \leq 0$$

$$10000000 - \text{price} \leq 0$$

$$h(x) = 0$$

$$\# \text{bedrooms} - 5 = 0$$

Convex



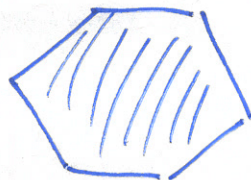
Convex



Convex



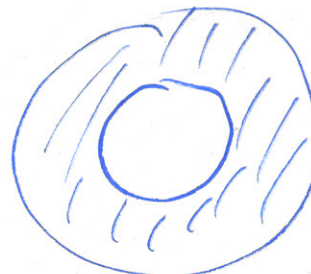
not convex



Convex



not convex



not convex

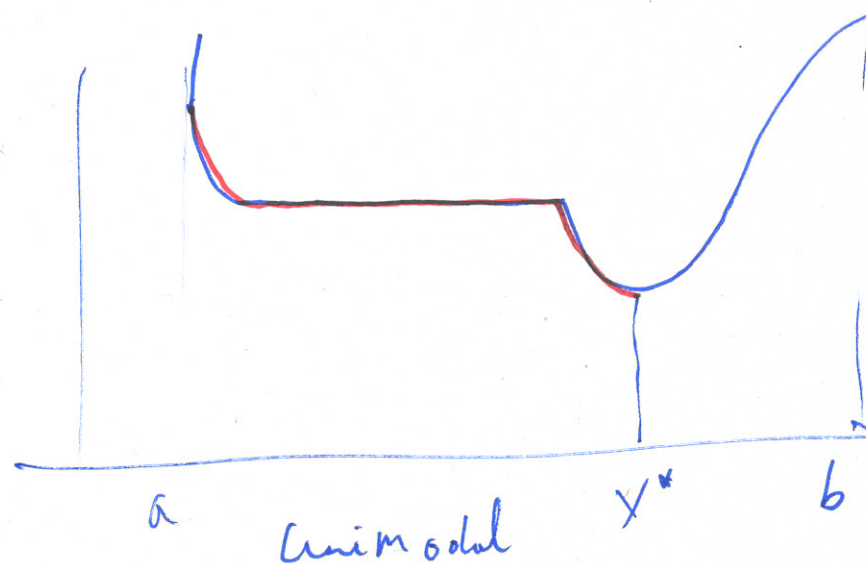
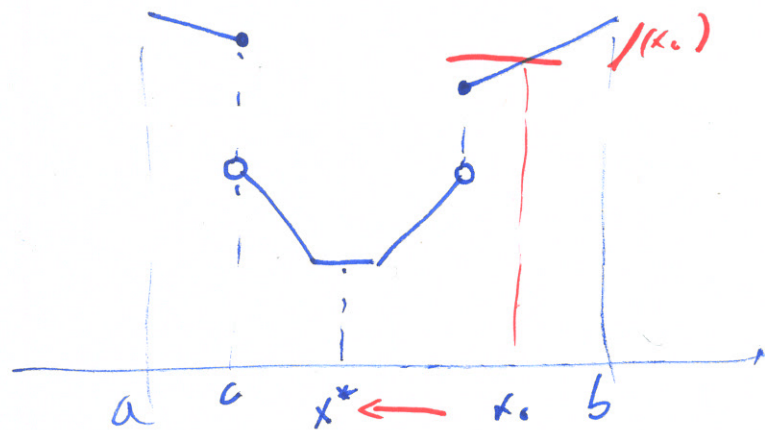
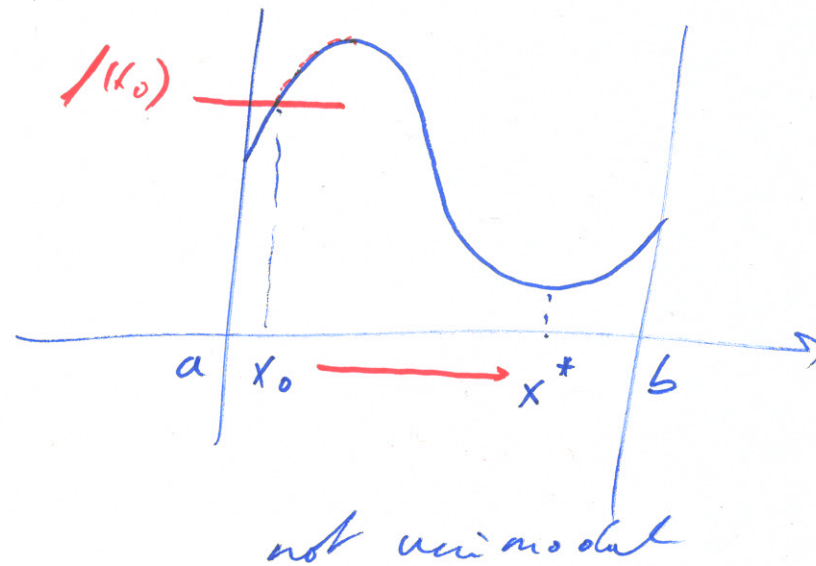
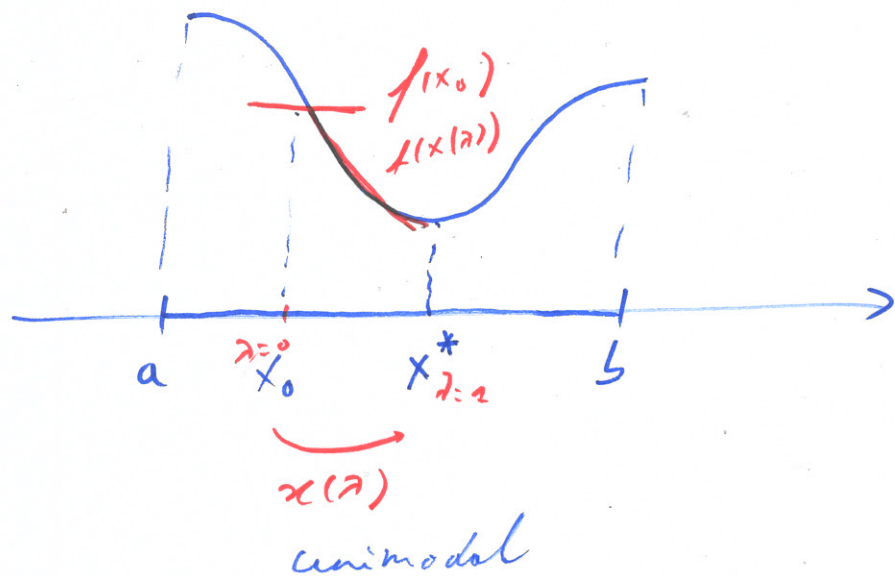


(pure triangle)
not-convex

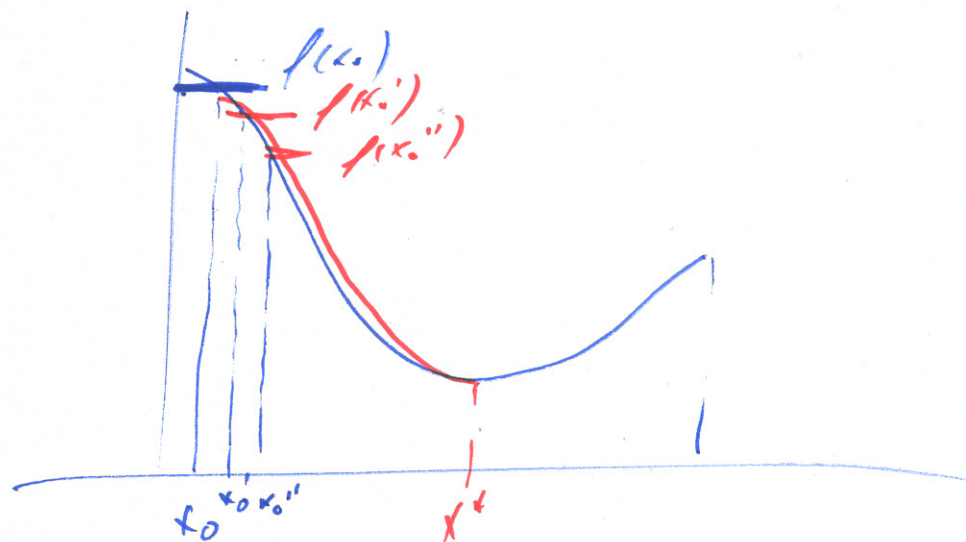
unimodal

$[a, b] \rightarrow \text{convex}$

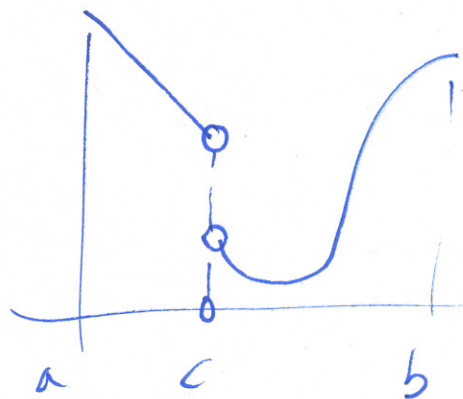
(3)



9



→ non increasing path to x_0'' → unimodal

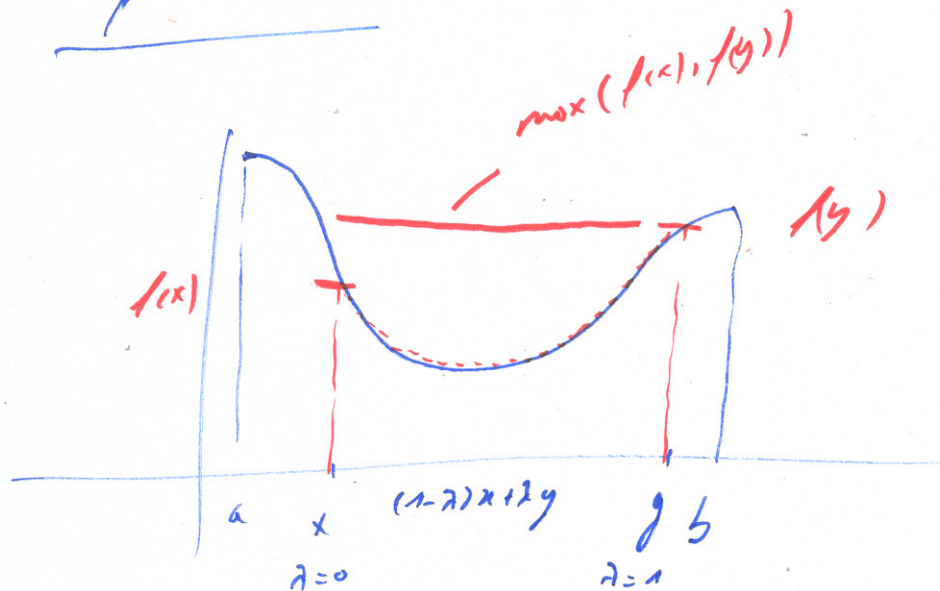


→ $\text{dom } f = [a, b] \setminus \{c\}$
 → not convex
 → f is not unimodal

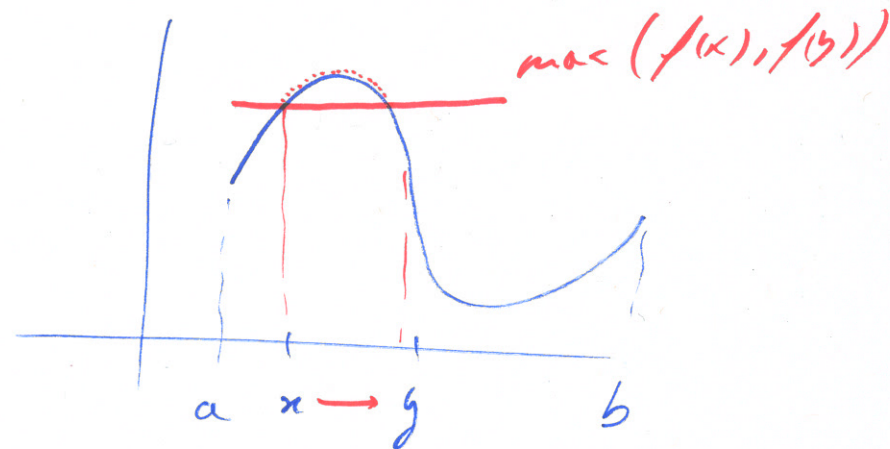
quasi convex

$[a, b]$ - convex

(5)



quasi convex
unimodal



not quasi convex
not unimodal

1D

quasi convex = unimodality

unimodal?
quasi convex?

$[a, b)$

