

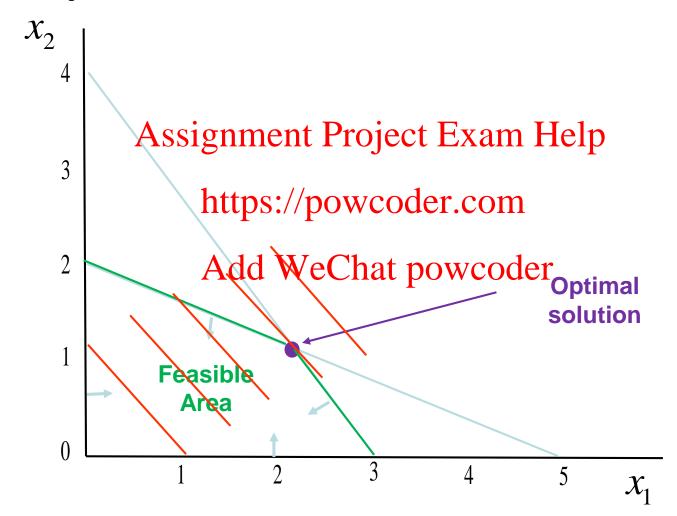
Assignment Project Exam Help

Non-linear programming Add WeChat powcoder Non-smooth problems CIS 418

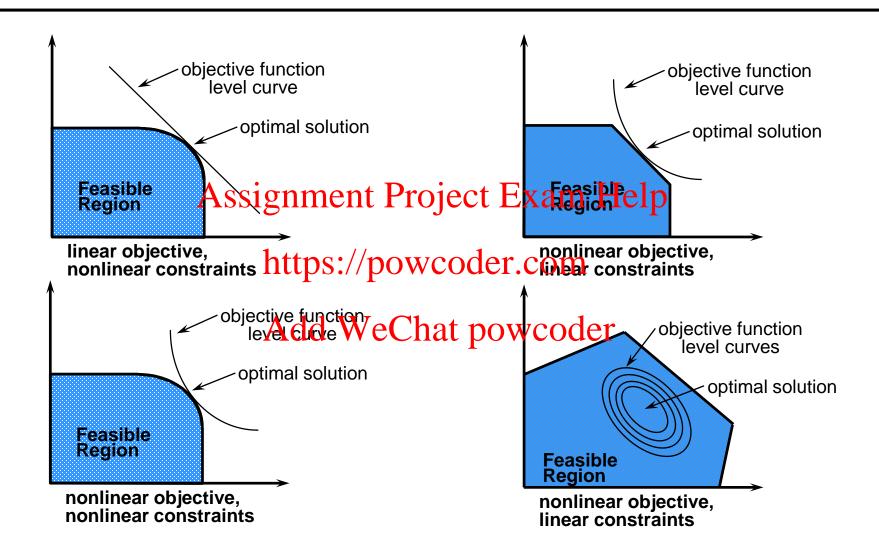
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Reminder: Linear Programming

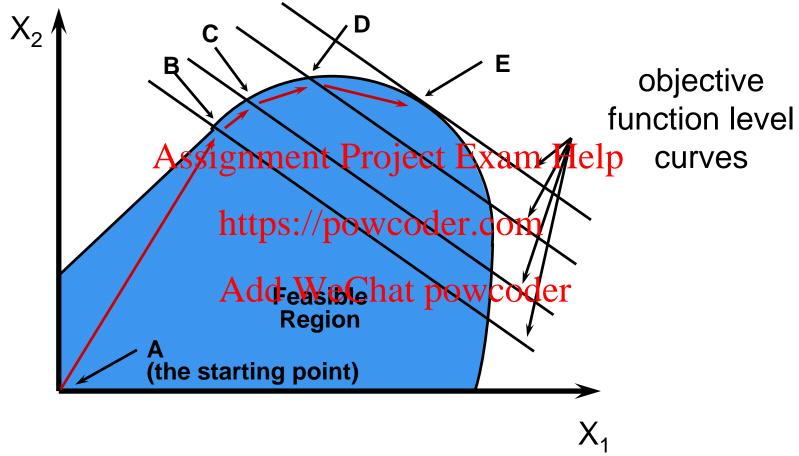
Both **objective** and **constraints** are **linear** functions of **decision variables**.



Non-linear optimization



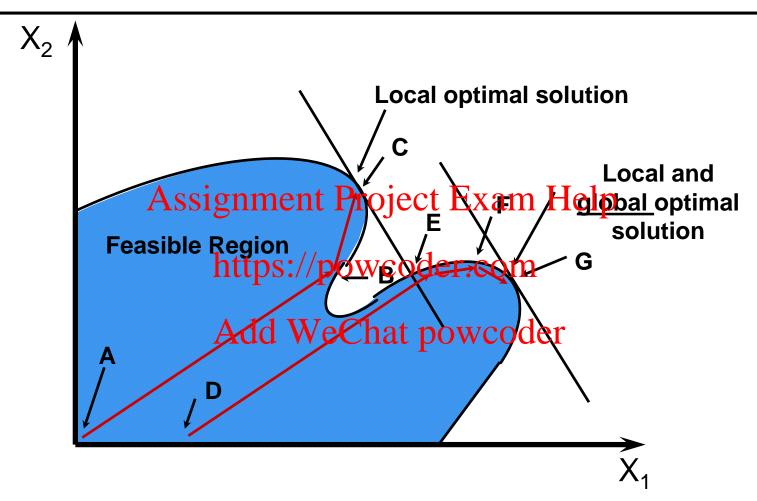
Solution Strategy: Improving Direction



One of the solution strategies for handling non-linear problems is to move as far as possible in improving direction – and find a **global solution**

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Non-Smooth Problems



- With a **non-smooth** problem, the algorithm may **not** be able to find the **global optimum**.
- The starting point influences the local optimal solution obtained.

Example for a non-smooth problem: Snoey Software

Product Cost D	ata											
			H	High-Speed	La	rge-Scale	Edu	cational				
	Product Com	pletion Cost	\$	150,000	\$	100,000	\$	-				
	Variabl	Variable Cost				20	\$	10				
	Assignm	ent Proje	ect I	Exam F	le1	n						
Market Data	1 100181111					· P						
	https://powcoder.com Marketing Willingness to pay for software version											
Market Segment	Segment Size	Costs		igh-Speed		ge-Scale		ational				
Large Companies	Add	\$V e100,0001	t po	WCOdo1	\$	1,000	\$	150				
Small Companies	24,000	\$ 100,000	\$	500	\$	250	\$	75				
Consultants	12,000	\$ 200,000	\$	750	\$	500	\$	100				
Laboratories	1,200	\$ 200,000	\$	1,000	\$	300	\$	125				
Students	400,000	\$ 300,000	\$	75	\$	40	\$	25				

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Formulate the problem

- Objective:
 - Maximize profit
- Decisions:
 - How to price sachweight Project Exam Help
- Constraints:

https://powcoder.com

- Calculations:
 - Revenue
 Add WeChat powcoder
 - Marketing costs
 - Production costs
 - Variable costs

Go to the excel file and calculate the optimal solution using solver

	D	ata Tabi	le Analysi	s Var	ying Tı	vo Prices	(as	sumes A igl	Spe	ed Version	orice	e \$250 0)
						Educ	atio	nal Versio	n Prio	ce		
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Price	\$	500	8,438			1,598,000		8,148,000	- 1 - 1	8,178,000		8,240,000
	\$	1,000	5,74	,0001	We	208,000	no	w 228 8P8	r	528,000		14,534,000
			•	Idd			P	Woode				
	Max	imum	14,534	,000								

Moving anywhere
in the immediate vicinity
of this point
does not
improve profit

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	D	ata Tabl	e Anal	ysis Var	ying i	Two Price	25 (0	assur	nes A igh	Spee	ed Version p	orice	e \$250 0)
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Moving anywhere
in the immediate vicinity
of this point
does not
improve profit

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	Max	imum	14,5	534,000													

Moving anywhere
in the immediate vicinity
of this point
does not
improve profit

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				Educational Version Price													
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				1100								/					
	Max	imum	14,	534,000													

This is the global maximum

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