HW15

Daniel Ginsburg

1)

Pack a knapsack with capacity = 20 so that the total value is maximized

Item	name	Weight	Value
1	W1	2	3
2	W2	4	5
3	W3	5	6
4	W4	7	8
5	W5	8	10

Graph of optimal value

		Total weight available																			
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
# items considered	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	2	0	0	3	3	5	5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	3	0	0	3	3	5	6	8	9	9	11	11	14	14	14	14	14	14	14	14	14	14
	4	0	0	3	3	5	6	8	9	9	11	11	14	14	16	17	17	19	19	22	22	22
	5	0	0	3	3	5	6	8	9	10	11	13	14	15	16	18	19	19	21	22	24	24

Maximum value: 24

2)

Pack a knapsack with capacity = 19 so that the total value is maximized

Item	name	Weight	Value
1	W1	2	3
2	W2	4	5
3	W3	5	6
4	W4	7	8

Graph of optimal value

		Total weight available																			
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
# items considered	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	2	0	0	3	3	5	5	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	3	0	0	3	3	5	6	8	9	9	11	11	14	14	14	14	14	14	14	14	14
	4	0	0	3	3	5	6	8	9	9	11	11	14	14	16	17	17	19	19	22	22

Maximum value: 22