11.

Solution: **a)** From the lecture, we know that any common subsequence between $A[1 \cdots n]$ and $B[1 \cdots m]$ must be one of the following:

(a) a common subsequence between $A[1 \cdots n-1]$ and $B[1 \cdots m]$;

(b) a common subsequence between $A[1 \cdots n]$ and $B[1 \cdots m-1]$;

(c) a common subsequence between $A[1 \cdots n-1]$ and $B[1 \cdots m-1]$ concatenated by x, if $A[n] = B[m] = x$.

Let $L[n, m]$ be the largest common subsequence between $A[1 \cdots n]$ and $B[1 \cdots m]$. It satisfies the following recurrence:

$$L[n, m] = \max\{L[n-1, m], L[n, m-1]\}, \quad \text{if } A[n] \neq B[m] \tag{1}$$
$$L[n, m] = \max\{L[n-1, m], L[n, m-1], k * L[n-1, m-1] + x\}, \quad \text{if } A[n] = B[m] = x \tag{2}$$

Dynamic programming algorithm can be developed using the above recurrence, starting with base case of $L[i, 0] = L[0, j] = 0$, for $1 \leq i \leq n$ and for $1 \leq j \leq m$.

The complexity of the algorithm is simply $\theta(nm)$. **1 points**.

b)

	1	2	3	9	4	6	7	5
2	/	2	2	2	2	2	2	2
8	/	2	2	2	2	2	2	2
3	/	2	23	23	23	23	23	23
1	1	2	23	23	23	23	23	23
4	1	2	23	23	234	234	234	234
6	1	2	23	23	234	2346	2346	2346
9	1	2	23	239	239	2346	2346	2346
5	1	2	23	239	239	2346	2346	23465

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