7) 1) $T(n) = cn \rightarrow O(n)$

2) $T(n) = \frac{cn}{2} \rightarrow O(n)$

3) $T(n) = cn^2 \rightarrow O(n^3)$

4) $T(n) = i \cdot m$

$$= \sum_{i=0}^{n+99} \left(\sum_{j=0}^{i \cdot m} (c_1) + \sum_{k=0}^{3m} (c_2) \right)$$

$$= \sum_{i=0}^{n+99} \{ \rightarrow (c_1 \cdot i \cdot m + c_2 \cdot 3m)$$

$$= \sum_{i=0}^{n+99} (c_1 \cdot i \cdot m) + \sum_{i=0}^{n+99} (3m \cdot c_2)$$

$$= \left(\sum_{i=0}^{n+99} (i) \right) \cdot mc_1 + (n+99) \cdot (3m \cdot c_2)$$

$$= \frac{n(n+1)}{2} \rightsquigarrow \frac{(n+99)(n+100)}{2} \cdot mc_1 + 3m^2 c_2 + 99 \cdot 3m c_2$$

$$= mc_1 \left(\frac{n^2 + 100n + 99n + 9900}{2} \right) + 3c_2 (n^2 + 99n)$$

$$= mc_1 \cdot \left(\frac{n^2}{2} + \frac{199n}{2} + 4950 \right) + 3 \cdot c_2 m^2 + 297 \cdot c_2 m$$

$$= \frac{n^3 \cdot c_1}{2} + \frac{199 n^2 c_1}{2} + 4950 mc_1 + 3c_2 m^2 + 297 \cdot c_2 m$$

$$= n^3 \cdot \frac{c_1}{2} + n^2 \cdot \frac{199 c_1}{2} + 4950 c_1 \cdot n + n^2 \cdot 3c_2 + n \cdot 297 c_2$$

$\rightarrow O(n^3)$

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5) $T(n) = \sum_{i=0}^{n} \left(\sum_{j=0}^{n} (c_1) \right) + \sum_{i=0}^{n} (c_2) = \sum_{i=0}^{n} (nc_1) + nc_2$

$= n^2 c_1 + nc_2 . \rightarrow O(n^2)$

6) $c_1 + \sum_{i=0}^{\frac{n^2}{2}+1} \left(\sum_{j=n}^{4} (c_2) \right) = c_1 + \frac{n^2}{2} + 1 \cdot 4c_2$

$= c_1 + \frac{4c_2 \cdot n^2}{2} + 4c_2$

$= c_1 + 2c_2 \cdot n^2 + 4c_2$

$\rightarrow O(n^2).$