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1) The first line, assignment, is $\theta(1)$. The second line, a for loop, is 100n + 1. The third line is 100n. Therefore the 1+100n+100n = 200n+2 = $\theta(n)$.

2) The first line, assignment is theta(1). The second line, a for loop, is (n^3)/4 + 1 because for each iteration, i decreases for 4. Likewise for the 3rd line is (n^3)/4. Therefore 1+2(n^3/4)+1 =θ(1/2*n^3+2) = θ(n^3).

3) The first line is 1. The second line is log(n) because for every iteration, it decreases by half. The 3rd line is also log(n) times. Hence 1 + log(n) + log(n) +1 = log(2n)+2 = θ(log(2n)).

4) The first line, assignment is theta(1). The second line, is 1. The third line is 1 because even though j increases by a multiple of 2 on each iteration, the total number of iteration is constant. The third line is a constant 1. 1+1+1+1=1=1 = 100*log100 + 2 = θ(log100).

5) The first line, which is a assignment, is 1. The second line, which iterates n times is n. The third line, which iterates for every I, is n/2. Therefore, the third line, num++ would be n/2 also. Thus the runtime of this algorithm is 1 + n + n/2 +n/2 = 2n+1 = $\theta(n)$.

6) the first line is 1. The second line is log n because of the multiple of i by 2 for each iteration. The third line is n/4 because for every iteration, j increases by 4. hence the 3rd line is also n/4. Thus runtime is 1 + n/4*log(n) + 1 + n/4+1 = n/4*log(n)+3+n/4 = θ(nlog(n)).

7) The first for loop is 2n+1 because it iterates through all of 2n + 1 for checking. 2Nd line is 2n. 3Rd line is n^3 +2 because the 4th line is n; the last line is n also. Thus the runtime is 2n+1+n^3+2+n = n^3+2n+3 = θ(n^3).

8) The first line is 1. The 2nd line is (n-1+1) * (