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CS 514

HW1

2)

2. a) Derivation of the running time assuming that multiplications and additions take constant time

T(n) = $\sum_{x=0}^{\log_2 n} c * \sqrt{n} + c * \sqrt{\sqrt{n}} * \sqrt{n}$

T(n) = $c * \left(\sqrt{n} + \sqrt{\sqrt{n}} * \sqrt{n}\right) * \log_2 n$

T(n) = $\sqrt{n}\left(1 + \sqrt{\sqrt{n}}\right) * \log_2 n$

O(n) = $\sqrt{n}\left(1 + \sqrt{\sqrt{n}}\right) * \log_2 n$

2. b) Derivation of the running time assuming multiplication and division of n-bit numbers take O(n^2) time and additions and subtractions take O(n) time