c) Recursive formula is $\boxed{T(n) = 3T(n/2) + \theta(n)}$ because the algorithm calls itself 3 times recursively with half of the values and the multiplication and addition is $\theta(n)$ as it is stated in the problem (using bits). (=Time complexity for Divide and Conquer algorithm)

e) Using master theorem,

$a = 3, b = 2, f(n) = \theta(n)$

so $f(n) = \Omega(n^{\log_2 3 - \varepsilon})$ $(\varepsilon < 0.5)$ which is case one and so $T(n) = \theta(n^{\log_2 3})$ same result as in (bonus).