2nd April Assignment

① $T(n) = 8T(n/2) + 1000n^2$

$a = 8, \quad b = 2, \quad k = 2$

$a > b^k \Rightarrow 8 > 4$

$T(n) = \Theta(n^{\log_2 8}) = \Theta(n^3)$

② $T(n) = 2T(n/2) + n^2$

$a = 2, \quad b = 2, \quad k = 2$

$a < b^k \Rightarrow 2 < 4$

$T(n) = \Theta(n^2 \log^0 n) = \Theta(n^2)$

③ $T(n) = 2T(n/2) + 10n$

$a = 2, \quad b = 2, \quad k = 1$

$a = b^k \Rightarrow 2 = 2$

$T(n) = \Theta(n^{\log_2 2} \log^{0+1} n) = \Theta(n \log n)$