마스터 정리를 이용하여 다음의 점근적 한계를 구하여라.

1

$T(n) = 2T(n/4) + 1$

- $a = 2$
- $b = 4$
- $f(n) = 1$
- $n^{\log_b a} = n^{1/2} = \sqrt{n}$
- case 1
- $T(n) = \Theta(\sqrt{n})$

2

$T(n) = 2T(n/4) + \sqrt{n}$

- $a = 2$
- $b = 4$
- $f(n) = \sqrt{n}$
- $n^{\log_b a} = n^{1/2} = \sqrt{n}$
- case 2
- $T(n) = \Theta(\sqrt{n} \log n)$

3

$T(n) = 2T(n/4) + n$

- $a = 2$
- $b = 4$
- $f(n) = n$
- $n^{\log_b a} = n^{1/2} = \sqrt{n}$
- $n/2 \leq cn$
- case 3
- $T(n) = \Theta(n)$

4

$T(n) = 2T(n/4) + n^2$

- $a = 2$
- $b = 4$
- $f(n) = n^2$
- $n^{\log_b a} = n^{1/2} = \sqrt{n}$
- $2(n/4)^2 \leq cn^2$
- case 3
- $T(n) = \Theta(n^2)$