

## Examples

For each of the following functions  $f_i(n)$ , express its asymptotic complexity in a simplest form such as  $\Theta(1)$ ,  $\Theta(\log_2 n)$ ,  $\Theta(\log_2 \log_2 n)$ ,  $\Theta(n)$ ,  $\Theta(n \log n)$ ,  $\Theta(n^k)$ ,  $\Theta(2^n)$ , etc.

1.  $f(n) = 4^{5n+9} = \Theta(\quad)$ ;

2.  $f(n) = \log_3(2n^4 + 6n^3) + \sqrt{12n + 14} = \Theta(\quad)$ ;

3.  $f(n) = \sqrt{5n^{10} + 4n + 8} = \Theta(\quad)$ ;

4.  $f(n) = \sqrt{6n + 45} \cdot (\log_4(n^3 - 12n) + 7) = \Theta(\quad)$ ;

5.  $f(n) = 8^{3n+9} = \Theta(\quad)$ ;

6.  $f(n) = (6n + 5)^{0.2} \cdot (3n + 8)^{0.4} + \log_2(n^3 + 48n^2) = \Theta(\quad)$ ;

7.  $f(n) = 4^{3n+1} = \Theta(\quad)$ ;

8.  $f(n) = \log_4(3n^2 + 5n - 8) = \Theta(\quad)$ ;

9.  $f(n) = \log_5(\sqrt{2n} + 3) = \Theta(\quad)$ ;

10.  $f(n) = \sum_{i=1}^{2n} \frac{n^2}{i} = \Theta(\quad)$ ;