

1 Basic Algorithmic Analysis

For each of the following function pairs f and g , list out the Θ , Ω , O relationships between f and g , if any such relationship exists. The log function here denotes the natural logarithm.

1. $f(x) = x^2, g(x) = x^2 + x$

2. $f(x) = 5000000x^3, g(x) = x^5$

3. $f(x) = \log(x), g(x) = 5x$

4. $f(x) = e^x, g(x) = x^5$

5. $f(x) = \log(5^x), g(x) = x$