

Question 1

From largest to smallest, the asymptotic size of the given functions are (with lg taken to represent \log_2 and lg^{1000} taken to mean $(lg(n))^{1000}$):

$$lg(n^{1000}) \quad (1)$$

$$(lgn)^n \quad (2)$$

$$n^{lgn} \quad (3)$$

$$n^{lg lgn} \quad (4)$$

$$(lgn)^{(lgn)} \quad (5)$$

$$lg^{1000} n \quad (6)$$

$$n^2 \quad (7)$$

$$nlgn \quad (8)$$

$$n \quad (9)$$

$$lgn \quad (10)$$

$$n^{(1/lgn)} \quad (11)$$

$$(1 + 0.001)^n \quad (12)$$

$$lg_{1000} n \quad (13)$$

$$1 \quad (14)$$

Question 2

Question 3

Question 4

Question 5