| Number of dishes (n) | $15n^2$ | 45n | $15n^2 + 45n$ |
|---|---|---|---|
| 1 | 15 | 45 | 60 |
| 2 | 60 | 90 | 150 |
| 5 | 375 | 225 | 600 |
| 10 | 1,500 | 450 | 1,950 |
| 100 | 150,000 | 4,500 | 154,500 |
| 1,000 | 15,000,000 | 45,000 | 15,045,000 |
| 10,000 | 1,500,000,000 | 450,000 | 1,500,450,000 |
| 100,000 | 150,000,000,000 | 4,500,000 | 150,004,500,000 |
| 1,000,000 | 15,000,000,000,000 | 45,000,000 | 15,000,045,000,000 |
| 10,000,000 | 1,500,000,000,000,000 | 450,000,000 | 1,500,000,450,000,000 |

**FIGURE 2.1** Comparison of terms in growth function

| Growth Function | Order | Label |
|---|---|---|
| $t(n) = 17$ | $O(1)$ | constant |
| $t(n) = 3 \log n$ | $O(\log n)$ | logarithmic |
| $t(n) = 20n - 4$ | $O(n)$ | linear |
| $t(n) = 12n \log n + 100n$ | $O(n \log n)$ | n log n |
| $t(n) = 3n^2 + 5n - 2$ | $O(n^2)$ | quadratic |
| $t(n) = 8n^3 + 3n^2$ | $O(n^3)$ | cubic |
| $t(n) = 2^n + 18n^2 + 3n$ | $O(2^n)$ | exponential |

**FIGURE 2.2** Some growth functions and their asymptotic complexity

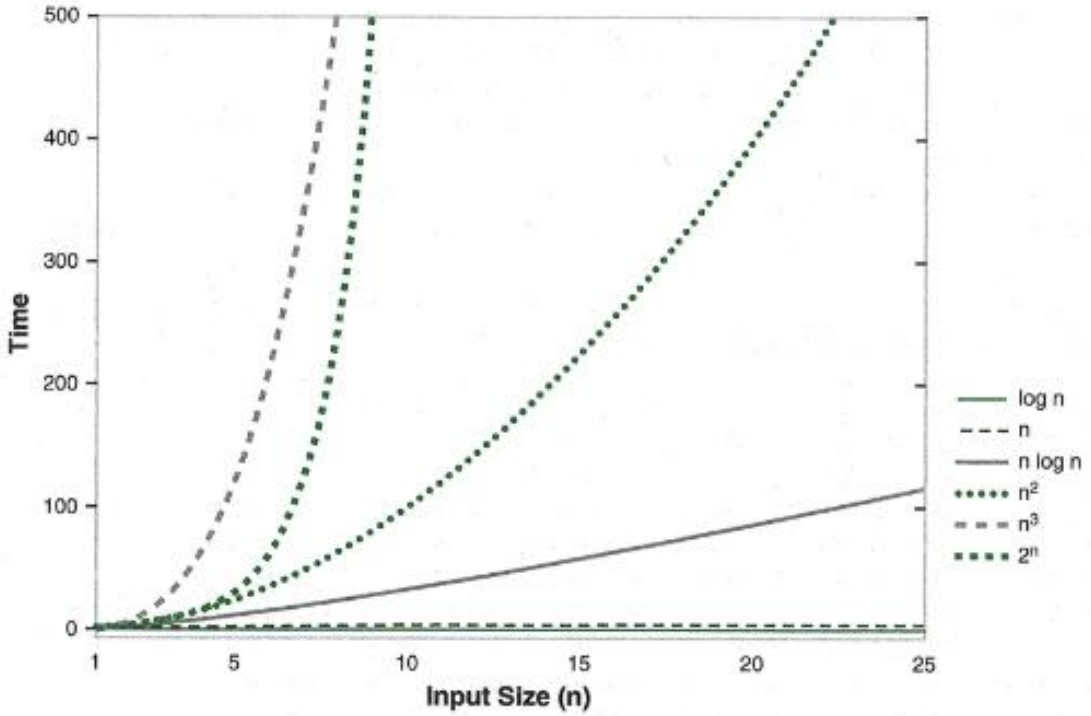


FIGURE 2.4 Comparison of typical growth functions for small values of n

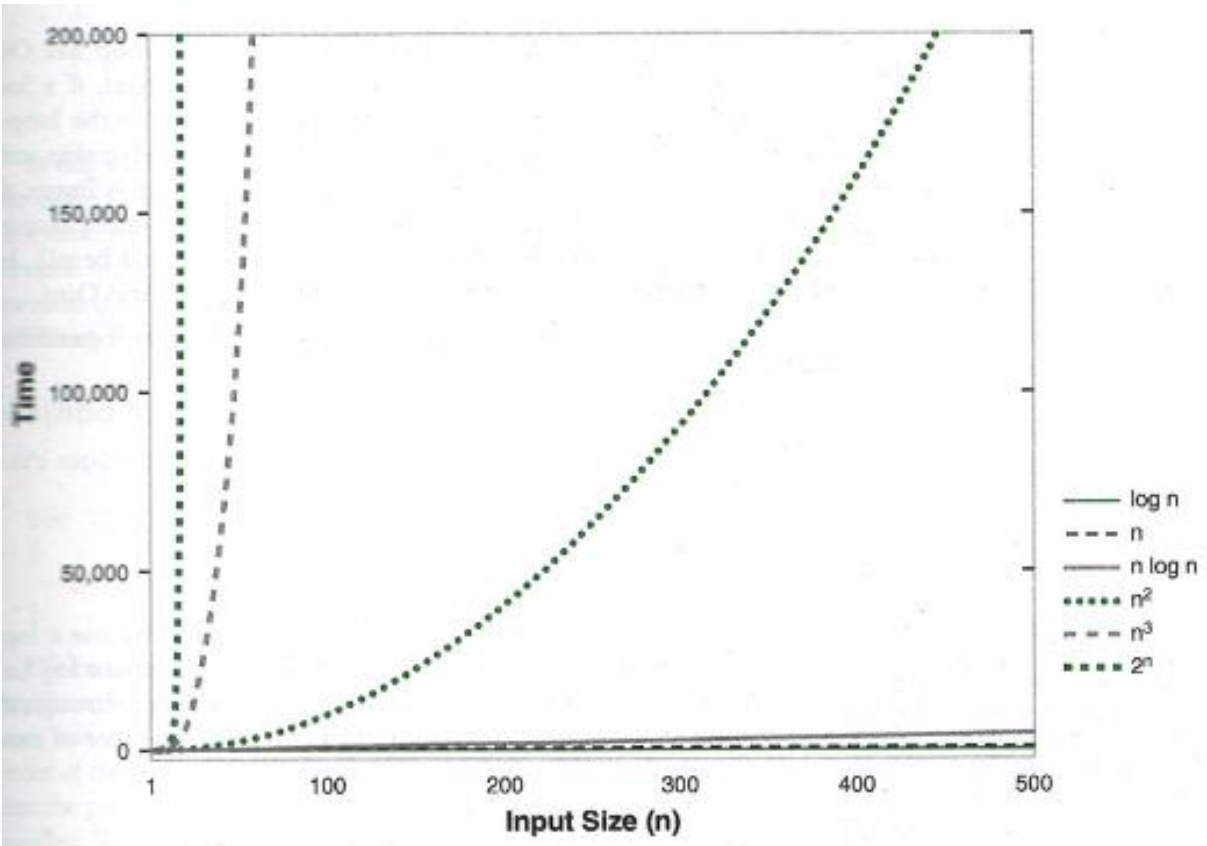


FIGURE 2.5 Comparison of typical growth functions for large values of n