

#### Q4: Orders of Growth, Mathematically

Tier 1 (slowest growth):  $1/n$

Tier 2:  $n^{\log_2 n}$   $\log_2 n$   $n \log_2 n$

Tier 3 (very close to Tier 2; tiny amount faster):  $12\sqrt{n}$   $50n^{0.5}$   $n^{0.51}$

Tier 4:  $2^{32n}$

Tier 5:  $100n^2 + 6n$   $n^2 - 324$

Tier 6:  $2n^3$

Tier 7 (fastest growth):  $3^n$