Ordering Complexity Classes:
Problem 3–3 *a*, page 58
Cormen, Leiserson, Rivest, Stein: Second Edition

We write $f(n) \equiv g(n)$ to mean that $f(n) = \Theta(g(n))$, and we write $f(n) \ll g(n)$ to mean that $f(n) = O(g(n))$ but $g(n) \neq \Theta(g(n))$.

Constant:

$1 \equiv n^{1/\lg n} = 2 \ll$

I don't know a class name for these:

$\lg(\lg^* n) \ll \lg^* n \equiv \lg^*(\lg n) \ll 2^{\lg^* n} \ll$

I don't know a class name for these:

$\ln \ln n \ll$

Polylogarithmic:

$\sqrt{\lg n} \ll \ln n \ll \lg^2 n \ll$

Superpolylogarithmic and subpolynomial:

$2^{\sqrt{2 \lg n}} \ll$

Polynomial:

$\left(\sqrt{2}\right)^{\lg n} = \sqrt{n} \ll n = 2^{\lg n} \ll n \lg n \equiv \lg(n!) \ll n^2 = 4^{\lg n} \ll n^3 \ll$

Superpolynomial and subexponential:

$(\lg n)! \ll n^{\lg \lg n} = (\lg n)^{\lg n} \ll$

Exponential:

$\left(\frac{3}{2}\right)^n \ll 2^n \ll n \cdot 2^n \ll e^n \ll n! \ll (n+1)! \ll$

Double Exponential:

$2^{2^n} \ll 2^{2^{n+1}}$