Big-O Cheat Sheet

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\( O(x) - \text{less than} \)
- Big O
- “5n is \( O(n) \) and \( O(n^2) \).” “Our algorithm runs in...”
- \( f < c \cdot g \) for large enough \( n \)

\( \Omega(x) - \text{greater than} \)
- Big Omega
- “5n is \( \Omega(n^2) \) and \( \Omega(n) \).” The opposite of Big-O. “Our lower bound shows...”
- \( f > c \cdot g \) for large enough \( n \)

\( \Theta(x) - \text{equal to} \)
- Big Theta
- “5n is \( \Theta(n^2) \).” “Furthermore, our bounds are tight...”
- \( c_1 \cdot g > f > c_2 \cdot g \) for large enough \( n \)

\( o(x) - \text{less than, not equal to.} \)
- Little O
- “5n\(^2\) is \( o(n^3) \).” “We break a long standing barrier, giving the first algorithm running in time...”
- \( f < c \cdot g \) for large enough \( n \) and for all \( c \). I.e. \( \frac{f}{g} \to 0 \)

\( \omega(x) - \text{greater than, not equal to.} \)
- Little Omega
- “\( n^2 \) is \( \omega(n) \).” The opposite of Little-O, and as far as I can tell, not very popular.
- \( f > c \cdot g \) for large enough \( n \) and for all \( c \). I.e. \( \frac{g}{f} \to 0 \)