



$$f(n) = 3n^4 + n^2 + 777n = O(n^4)$$

$$= \Theta(n^4)$$

$$[9, 16, 4, 1]$$

$f(n)$
 $g(n)$
 $\lim_{n \rightarrow \infty} \frac{f}{g}$

$$f(n) = 3n^4 + n^3 + 12n$$

$$g(n) = 3n^4 + n^3 + 1$$

$$\lim_{n \rightarrow \infty} \frac{f(n)}{g(n)} = \lim_{n \rightarrow \infty} \frac{f'(n)}{g'(n)} = \lim_{n \rightarrow \infty} \frac{12n^3 + 3n^2 + 12}{12n^3 + 3n^2} = \lim_{n \rightarrow \infty} \frac{f''(n)}{g''(n)}$$

$$= \lim_{n \rightarrow \infty} \frac{36n^2 + 6n}{36n^2 + 6n} = 1$$