What is the relationship between f(x) and g(x)?

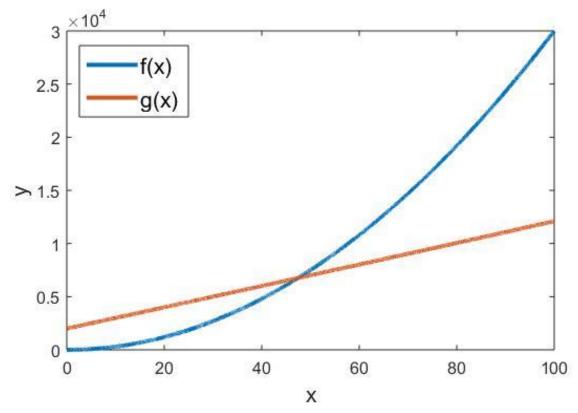
$$A. f(x) \in O(g(x))$$

B. 
$$f(x) \in \Theta(g(x))$$

C. 
$$f(x) \in \Omega(g(x))$$

D. None of the above relations hold for all  $\boldsymbol{x}$ 

E. Impossible to determine



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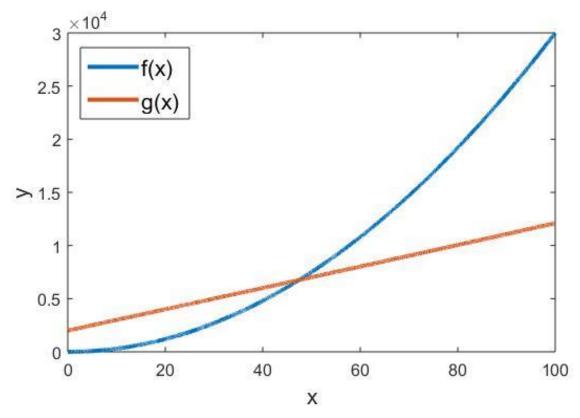
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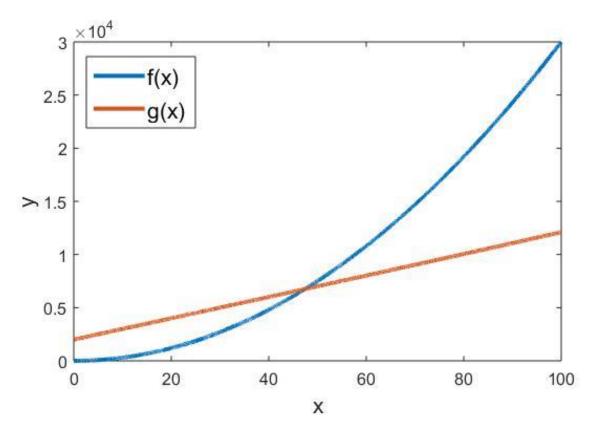
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$$f(x) = 3x^2$$
$$g(x) = \frac{1}{1000}x^3 + 100x + 2000$$



Which is the **worst** (i.e., fastest-growing) of the following runtimes?

A. 
$$\log(n^{100})$$

B. 
$$(\log n)^{100}$$

C. 
$$\sqrt[100]{n}$$

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