Exercise 2.2-1

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If we denote the function $f(n)$ by

$$f(n) = \frac{n^3}{1000} - 100n^2 - 100n + 3,$$

then $f(n)$ is a third degree polynomial in n. A simple argument shows that $f(n)$ approaches infinity at a proportional rate to $g(n) := n^3$. Therefore, $\Theta(f(n)) = \Theta(n^3)$.