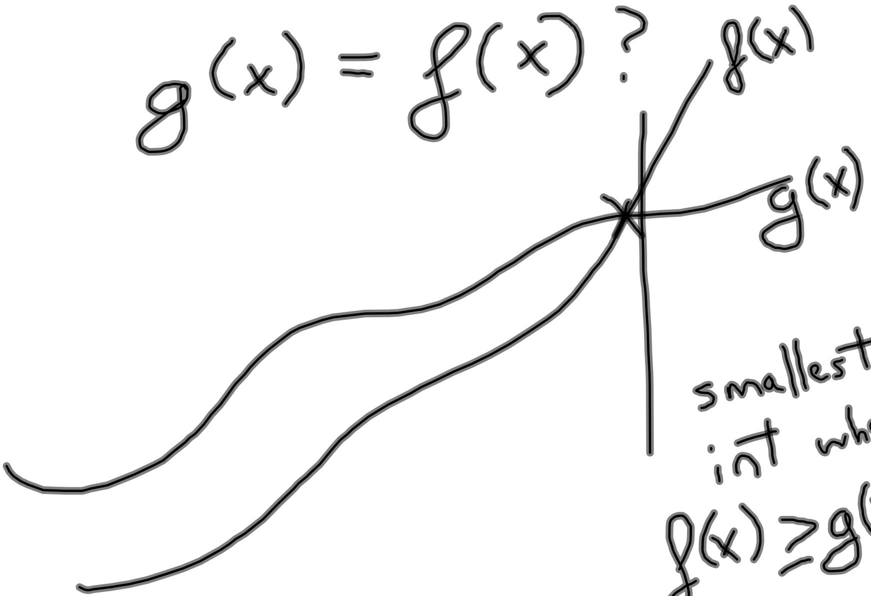
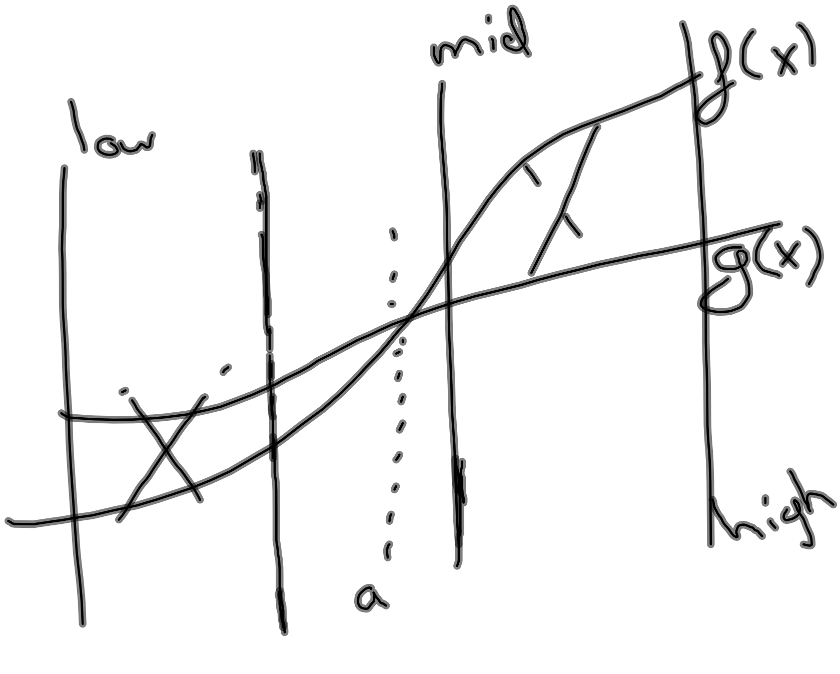
$$g(x) = 100x^2 + 20x + 3500$$

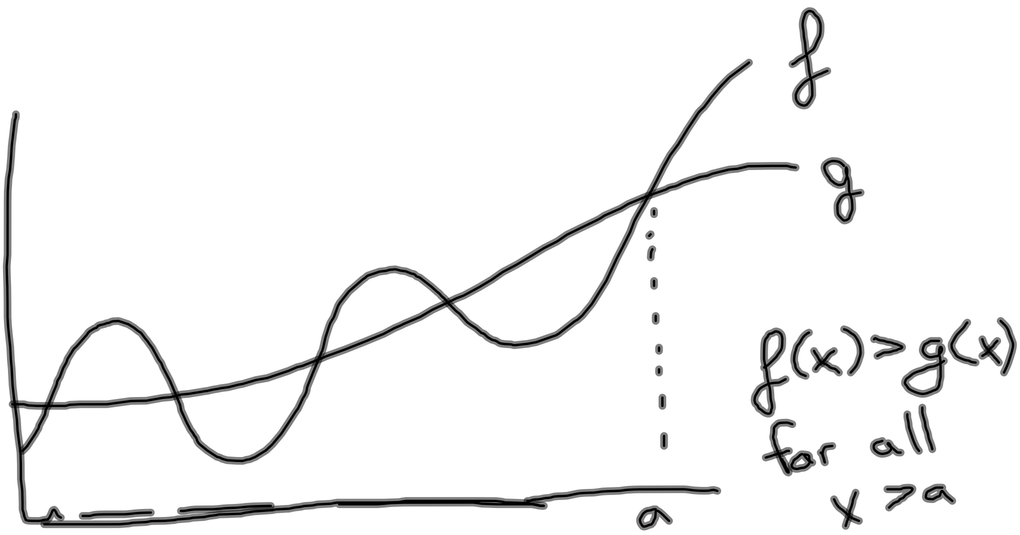
$$f(x) = x^3 - 2000x^2$$

$$g(x) = f(x)\ ?$$



smallest int where $f(x) \geq g(x)$





f
g
a
f(x)>g(x)
for all
x >a

O, Ω, Θ notation

for functions f and g

If for sufficiently large values x, the values of $|f|$ are less than those of a multiple of $|g|$

f is order <u>at most</u> g

or $f(x)$ is $O(g(x))$

$f(x)$ is $O(g(x))$ iff

$\exists\ B, b \in \mathbb{R}^+$ s.t.

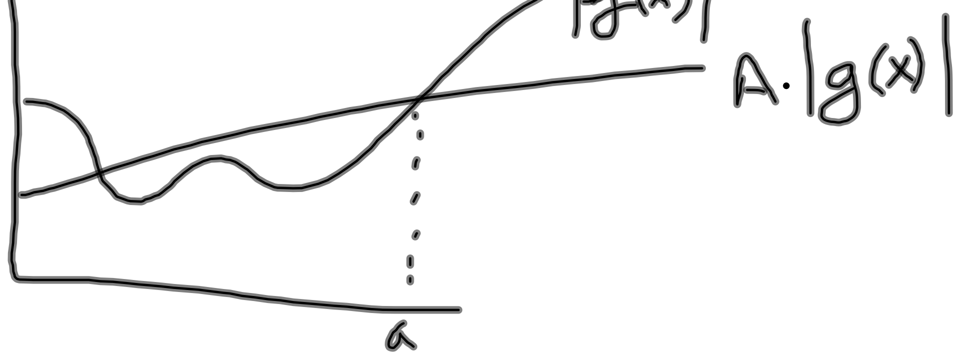
$|f(x)| \leq B|g(x)|$ for all real numbers $x > b$.

Ω

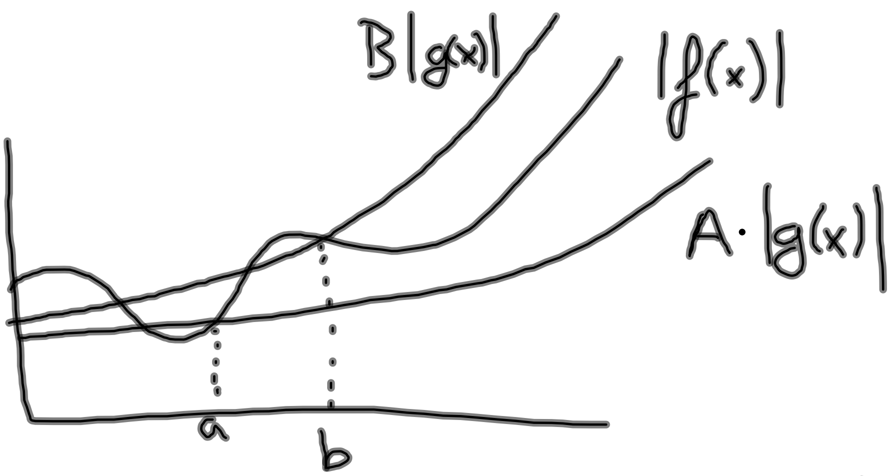
If for sufficiently large values of x, the values of $|f|$ are <u>greater</u> than some multiple of $|g|$

f is of order at least g or
$f(x)$ is $\Omega(g(x))$

$f(x)$ is $\Omega(g(x))$ iff
$\exists\, A, a \in \mathbb{R}^+$ s.t.
$A \cdot |g(x)| \leq |f(x)$
$\forall x > a$



Θ



f is order g

$f(x)$ is $\Theta(g(x))$