

x

$$\frac{2x^2}{x^2 + 1} \rightarrow 2x^2 + 2$$

Problem 2-1

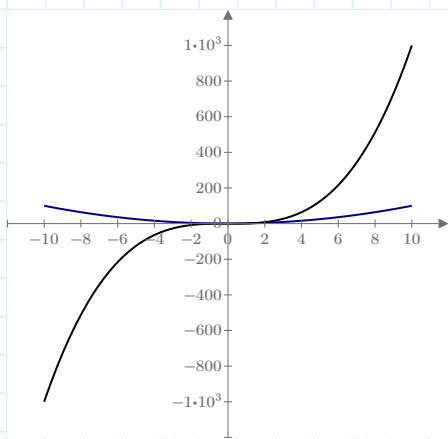
$$f(x) := 2x^2$$

$$g(x) := x^2 + 1$$

$$\frac{d}{dx} f(x) \rightarrow 4 \cdot x$$

$$\frac{d}{dx} g(x) \rightarrow 2 \cdot x$$

$g(x)$ grows no faster than $f(x)$



x

$$\frac{x^2}{x^3} \rightarrow 2 \cdot x$$

problem 2-2

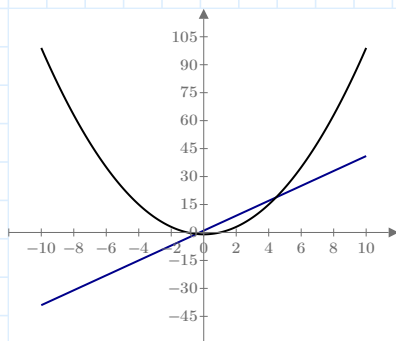
$$f(x) := x^2$$

$$g(x) := x^3$$

$$\frac{d}{dx} f(x) \rightarrow 2 \cdot x$$

$$\frac{d}{dx} g(x) \rightarrow 3 \cdot x^2$$

$f(x)$ grows no faster than $g(x)$



x

$$\frac{4x + 1}{x^2 - 1} \rightarrow 2 \cdot x$$

problem 2-3

$$f(x) := 4x + 1$$

$$g(x) := x^2 - 1$$

$$\frac{d}{dx} f(x) \rightarrow 4$$

$$\frac{d}{dx} g(x) \rightarrow 2 \cdot x$$

$f(x)$ grows no faster than $g(x)$