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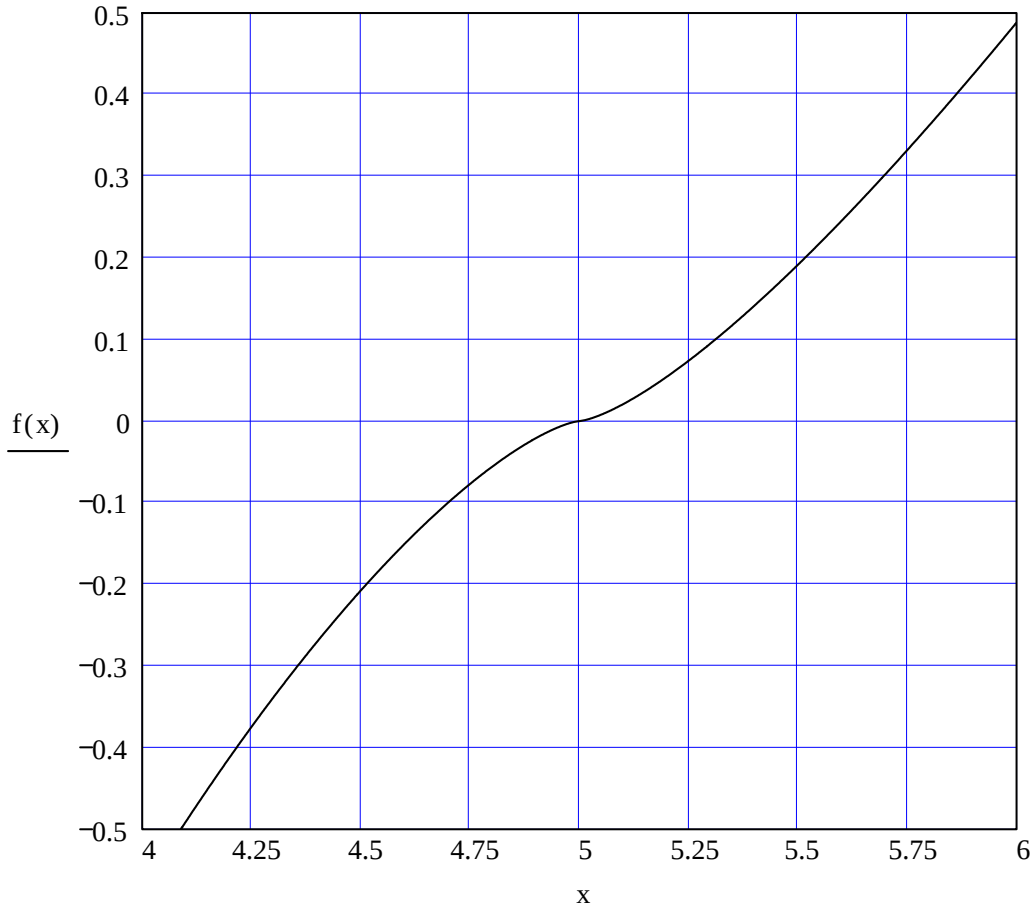
Graphics

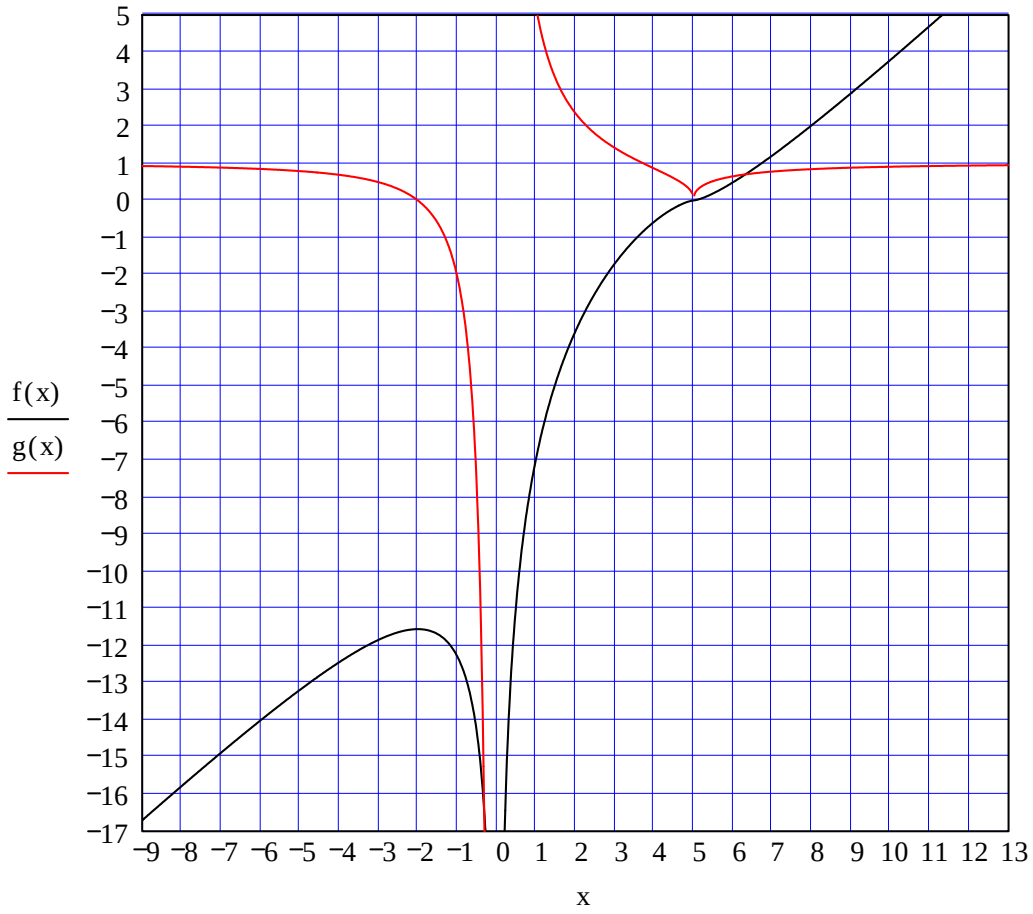
Asymptotics

$$f(x) := \sqrt[5]{\frac{(x-5)^7}{x^2}}$$



$\sqrt[5]{\frac{(x-5)^7}{x^2}}$ by differentiation, yields $\frac{1}{5\cdot\left[\frac{(x-5)^7}{x^2}\right]^{\frac{4}{5}}}\cdot\left[7\cdot\frac{(x-5)^6}{x^2}-2\cdot\frac{(x-5)^7}{x^3}\right]$

$$g(x) := \frac{1}{5\cdot\sqrt[5]{\left[\frac{(x-5)^7}{x^2}\right]^4}}\cdot\left[7\cdot\frac{(x-5)^6}{x^2}-2\cdot\frac{(x-5)^7}{x^3}\right]$$



Given $g(x) = 0$ $\quad$ Find$(x) \to -2$

$$\lim_{x \to \infty} \frac{f(x)}{x} \to 1 \qquad \lim_{x \to \infty} (f(x) - x) \to -7$$

$h(x) := x - 7$


f(x)
h(x)
18
16
14
12
10
8
6
4
2
0
−2
−4
−6
−8
−10
−12
−14
−16
−18
−20
−22
−24
−26
−18 −16 −14 −12 −10 −8 −6 −4 −2 0 2 4 6 8 10 12 14 16 18 20 22 24 26
x