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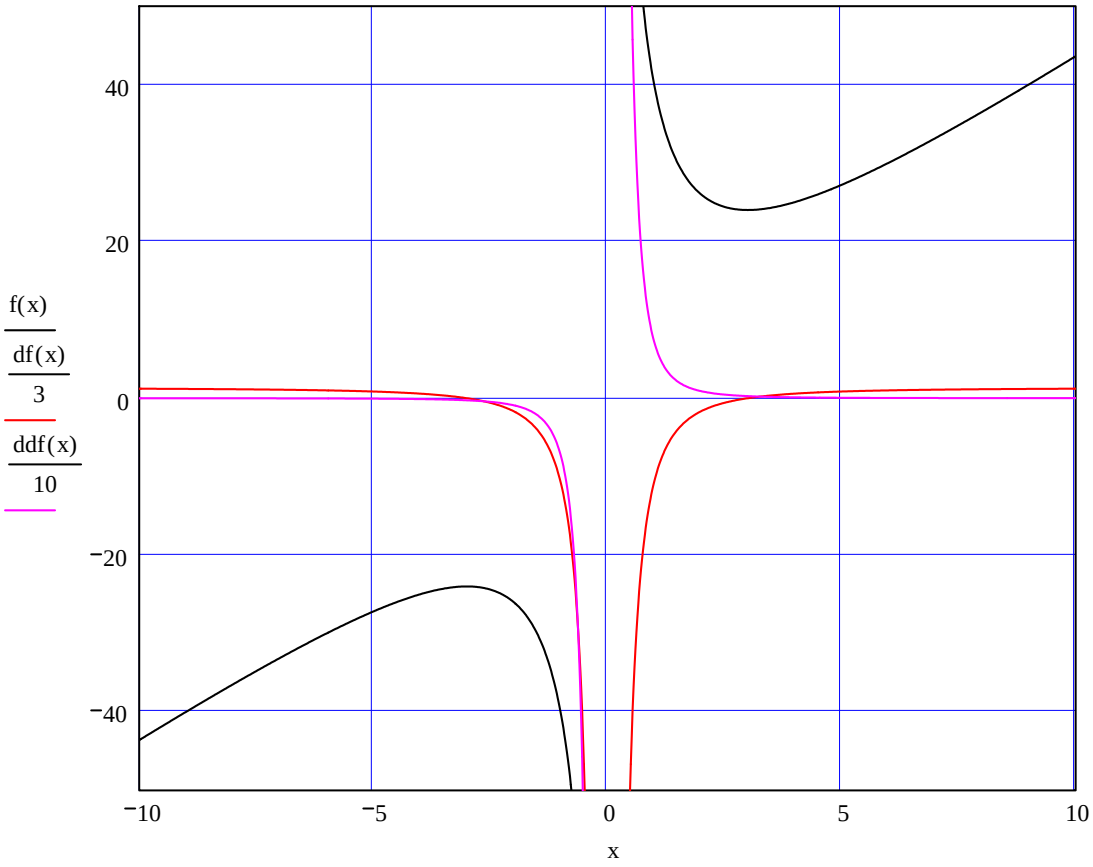
D4(1)

$f(x) := 4x + \frac{36}{x}$ $df(x) := \frac{d}{dx} f(x)$ $ddfa(x) := \frac{d}{dx} df(x)$ $ddf(x) := \frac{d^2}{dx^2} f(x)$

$df(x) \rightarrow 4 - \frac{36}{x^2}$ $ddf(x) \rightarrow \frac{72}{x^3}$



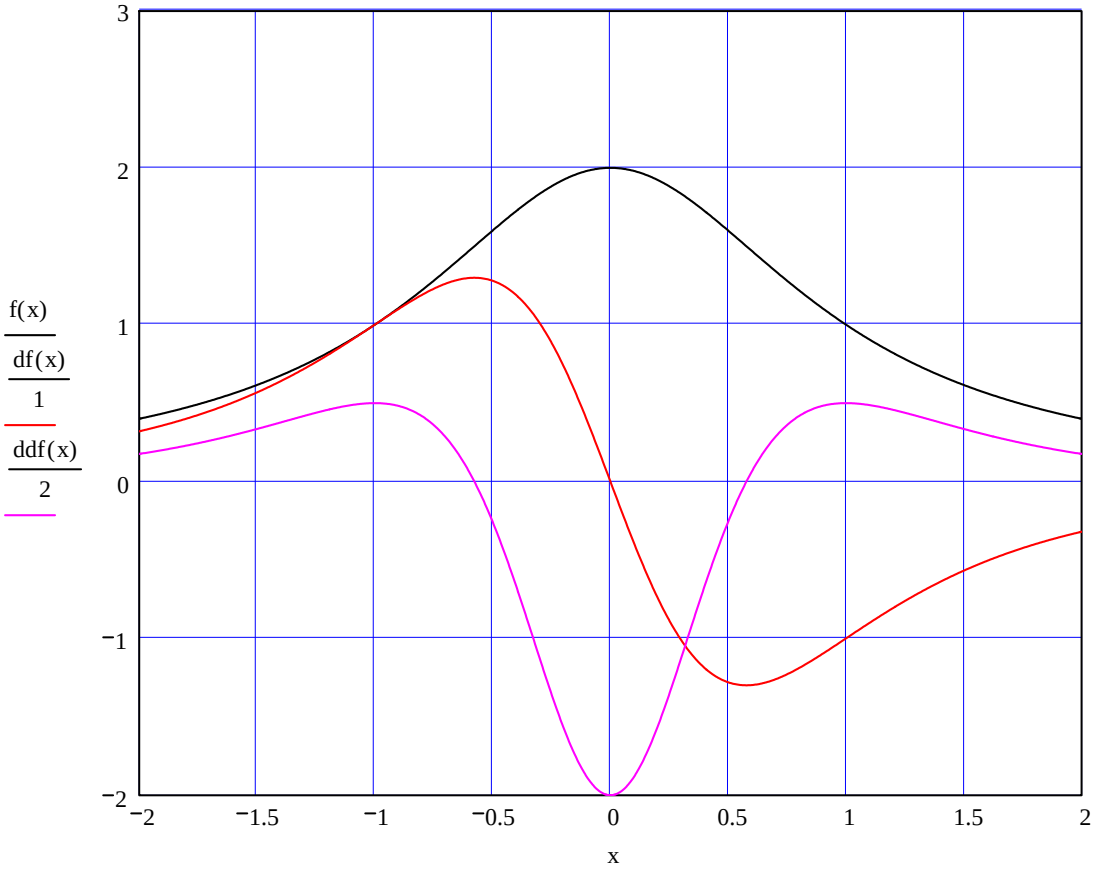
Given $df(x) = 0$ $Find(x) \rightarrow (3 \quad -3)$

$xa := 3$ $ddf(xa) \rightarrow \frac{8}{3}$ $xb := -3$ $ddf(xb) \rightarrow \frac{-8}{3}$

D4(2)

$f(x) := \frac{2}{x^2 + 1}$ $df(x) := \frac{d}{dx} f(x)$ $ddfa(x) := \frac{d}{dx} df(x)$ $ddf(x) := \frac{d^2}{dx^2} f(x)$

$df(x) \rightarrow \frac{-4}{(x^2 + 1)^2} \cdot x$ $ddf(x) \rightarrow \frac{16}{(x^2 + 1)^3} \cdot x^2 - \frac{4}{(x^2 + 1)^2}$



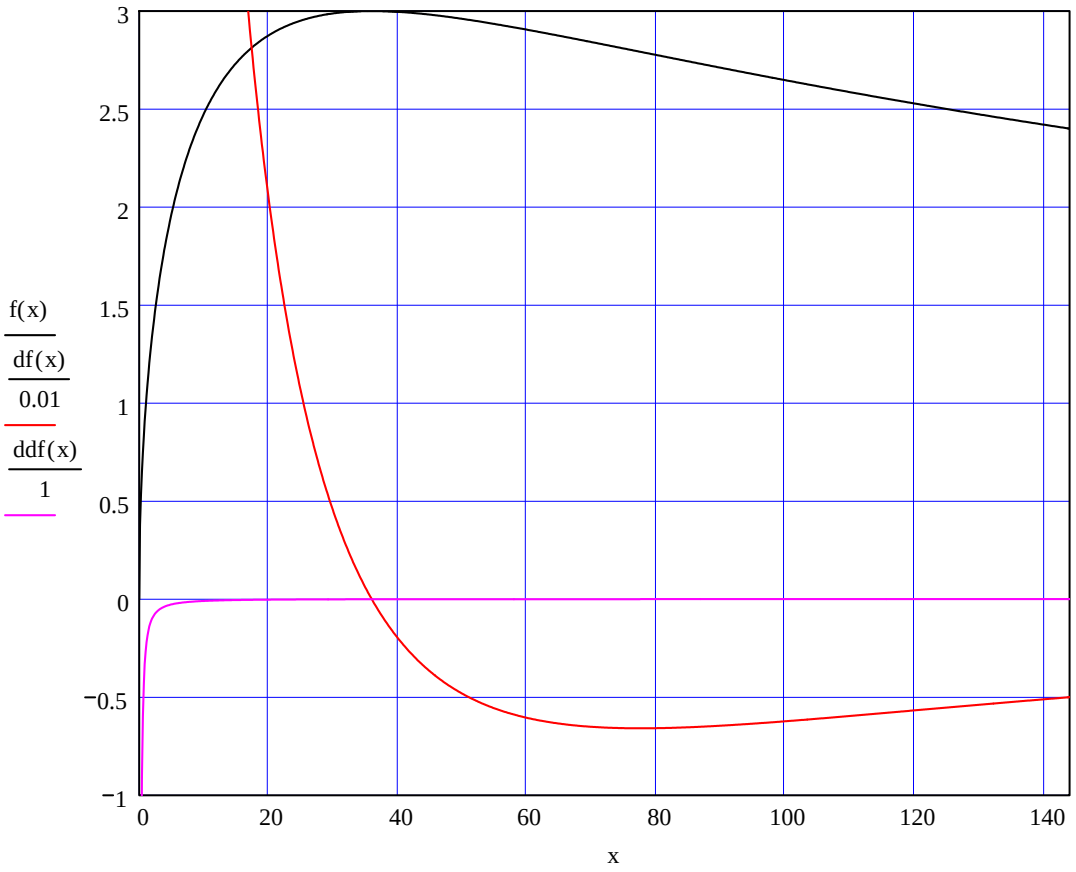
Given $df(x) = 0$ $Find(x) \rightarrow 0$

$xa := 0$ $ddf(xa) \rightarrow -4$

D4(3)

$$f(x) := \frac{36\sqrt{x}}{x + 36} \qquad df(x) := \frac{d}{dx} f(x) \qquad ddfa(x) := \frac{d}{dx} df(x) \qquad ddf(x) := \frac{d^2}{dx^2} f(x)$$

$$df(x) \rightarrow \frac{18}{x^{\frac{1}{2}} \cdot (x + 36)} - 36 \cdot \frac{x^{\frac{1}{2}}}{(x + 3} \qquad ddf(x) \rightarrow \frac{-9}{x^{\frac{3}{2}} \cdot (x + 36)} - \frac{36}{x^{\frac{1}{2}} \cdot (x + 36)^2} + 72 \cdot \frac{x^{\frac{1}{2}}}{(x + 36)^3}$$



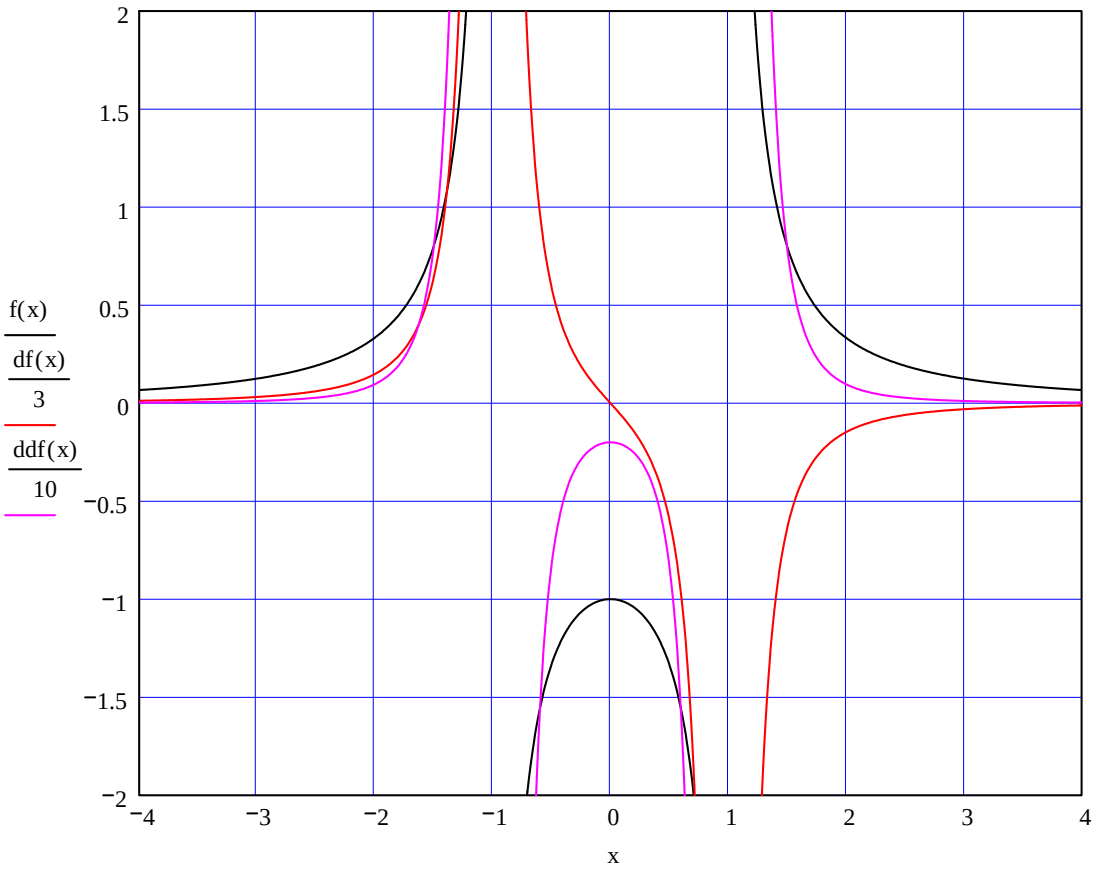
Given $df(x) = 0$ Find$(x) \rightarrow 36$

$xa := 6$ $ddf(xa) \rightarrow \frac{-23}{2744} \cdot 6^{\frac{1}{2}}$

D2(5)

$f(x) := \frac{1}{x^2 - 1}$ $df(x) := \frac{d}{dx} f(x)$ $ddfa(x) := \frac{d}{dx} df(x)$ $ddf(x) := \frac{d^2}{dx^2} f(x)$

$df(x) \rightarrow \frac{-2}{\left(x^2 - 1\right)^2} \cdot x$ $ddf(x) \rightarrow \frac{8}{\left(x^2 - 1\right)^3} \cdot x^2 - \frac{2}{\left(x^2 - 1\right)^2}$



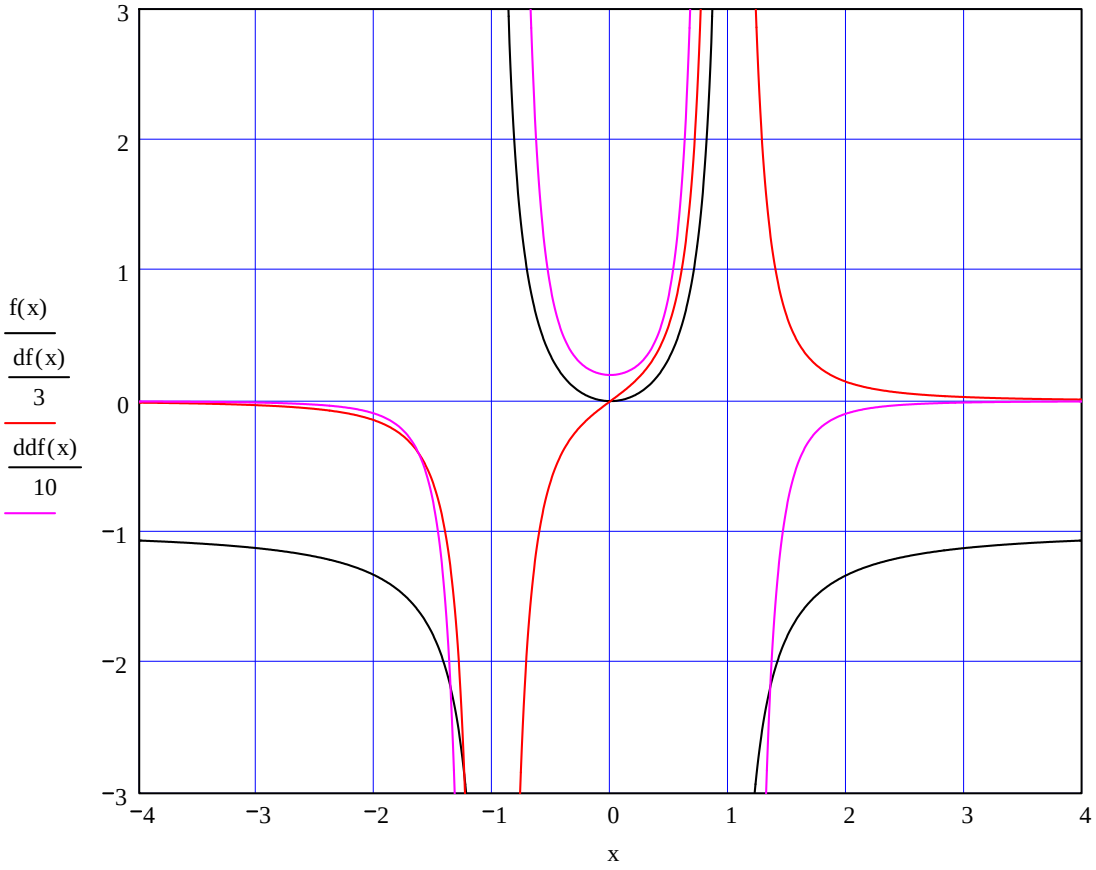
Given $df(x) = 0$ $Find(x) \rightarrow 0$

$xa := 0$ $ddf(xa) \rightarrow -2$

D2(6)

$$f(x) := \frac{x^2}{1 - x^2} \qquad df(x) := \frac{d}{dx} f(x) \qquad ddf(x) := \frac{d^2}{dx^2} f(x)$$

$$df(x) \rightarrow 2 \cdot \frac{x}{1 - x^2} + 2 \cdot \frac{x^3}{\left(1 - x^2\right)^2} \qquad ddf(x) \rightarrow \frac{2}{1 - x^2} + 10 \cdot \frac{x^2}{\left(1 - x^2\right)^2} + 8 \cdot \frac{x^4}{\left(1 - x^2\right)^3}$$



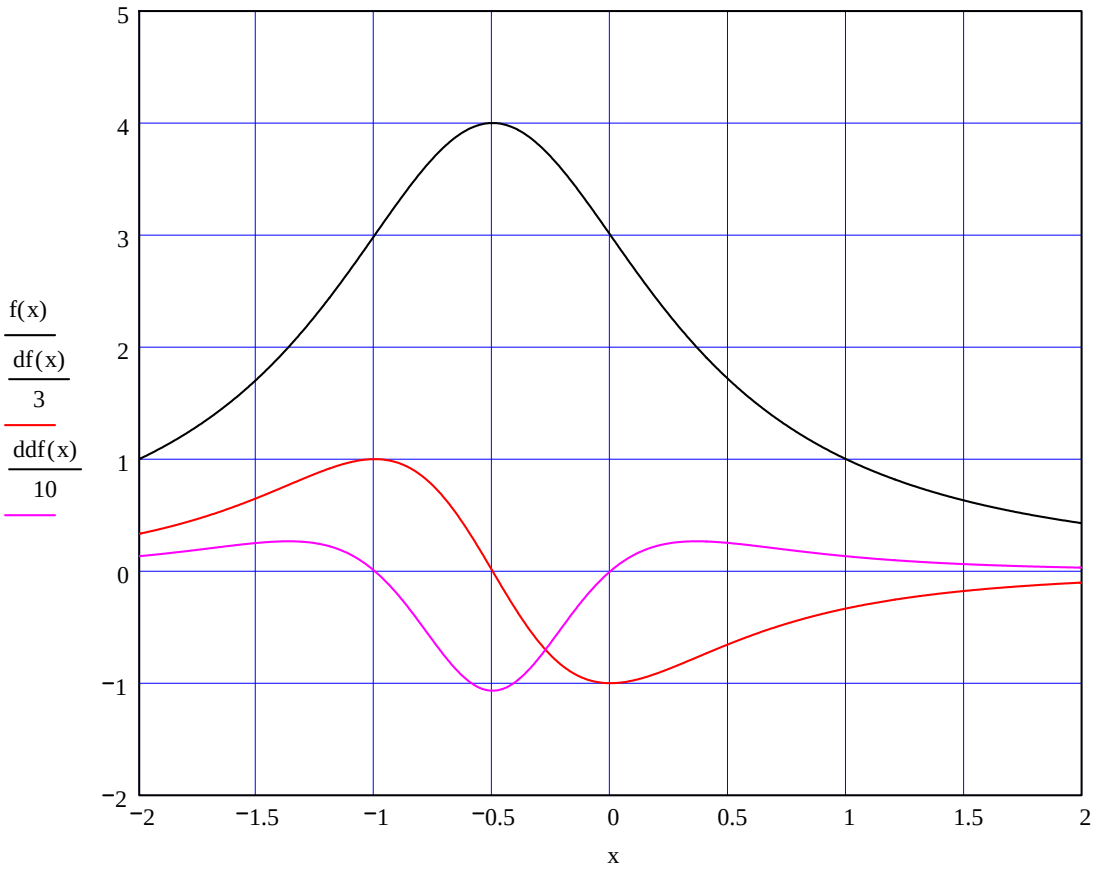
Given $df(x) = 0$ $Find(x) \to 0$

$xa := 0$ $ddf(xa) \to 2$

D2(7)

$$f(x) := \frac{3}{x^2 + x + 1} \qquad df(x) := \frac{d}{dx} f(x) \qquad ddf(x) := \frac{d^2}{dx^2} f(x)$$

$$df(x) \to \frac{-3}{\left(x^2 + x + 1\right)^2} \cdot (2 \cdot x + 1) \qquad ddf(x) \to \frac{6}{\left(x^2 + x + 1\right)^3} \cdot (2 \cdot x + 1)^2 - \frac{6}{\left(x^2 + x + 1\right)^2}$$



Given $\quad df(x) = 0 \quad$ Find(x) $\rightarrow \frac{-1}{2}$

$xa := 2 \quad$ $ddf(xa) \rightarrow \frac{108}{343}$