x by differentiation, yields 1

x^2 by differentiation, yields $2 \cdot x$

x^7 by differentiation, yields $7 \cdot x^6$

$2x^3 + 3x^2 + 6x + 12$ by differentiation, yields $6 \cdot x^2 + 6 \cdot x + 6$

x^{π} by differentiation, yields $x^{\pi} \cdot \frac{\pi}{x}$

$\sqrt{x}$ by differentiation, yields $\frac{1}{2 \cdot x^{\frac{1}{2}}}$

$\sqrt[3]{x}$ by differentiation, yields $\frac{1}{3 \cdot x^{\frac{2}{3}}}$

$\frac{1}{\sqrt{x}}$ by differentiation, yields $\frac{-1}{2 \cdot x^{\frac{3}{2}}}$

$\frac{1}{x}$ by differentiation, yields $\frac{-1}{x^2}$

$\frac{1}{x^7}$ by differentiation, yields $\frac{-7}{x^8}$

$\frac{1}{\sqrt[3]{x}}$ by differentiation, yields $\frac{-1}{3 \cdot x^{\frac{4}{3}}}$

$\sqrt{x - 1}$ by differentiation, yields $\frac{1}{2 \cdot (-1 + x)^{\frac{1}{2}}}$

$\sqrt{2 \cdot x}$ by differentiation, yields $\frac{\frac{1}{2} \cdot 2^{\frac{1}{2}}}{x^{\frac{1}{2}}}$

part 2

$\frac{1}{\sin(x)}$ by differentiation, yields $\frac{-1}{\sin(x)^2} \cdot \cos(x)$

$\frac{x}{\sin(x)}$ by differentiation, yields $\frac{1}{\sin(x)} - \frac{x}{\sin(x)^2} \cdot \cos(x)$

$\frac{\sin(x)}{x}$ by differentiation, yields $\frac{\cos(x)}{x} - \frac{\sin(x)}{x^2}$

$x \cdot \sin(x)$ by differentiation, yields $\sin(x) + x \cdot \cos(x)$

$e^x \cdot \cos(x)$ by differentiation, yields $\exp(x) \cdot \cos(x) - \exp(x) \cdot \sin(x)$

$x^3 \cdot e^{-x}$ by differentiation, yields $3 \cdot x^2 \cdot \exp(-x) - x^3 \cdot \exp(-x)$

$\sqrt{x} \cdot \tan(x)$ by differentiation, yields $\frac{1}{2 \cdot x^{\frac{1}{2}}} \cdot \tan(x) + x^{\frac{1}{2}} \cdot \left(1 + \tan(x)^2\right)$

$x^3 \cdot \sin(2 \cdot x)$ by differentiation, yields $3 \cdot x^2 \cdot \sin(2 \cdot x) + 2 \cdot x^3 \cdot \cos(2 \cdot x)$

$x \cdot \ln(x)$ by differentiation, yields $\ln(x) + 1$

$\frac{x}{\ln(x)}$ by differentiation, yields $\frac{1}{\ln(x)} - \frac{1}{\ln(x)^2}$

$\sin(x) \cdot \log(x, 2)$ by differentiation, yields $\cos(x) \cdot \frac{\ln(x)}{\ln(2)} + \frac{\sin(x)}{x \cdot \ln(2)}$

$x \cdot e^{x}$ by differentiation, yields $\exp(x) + x \cdot \exp(x)$

$x^{\pi} \cdot \pi^{x}$ by differentiation, yields $x^{\pi} \cdot \frac{\pi}{x} \cdot \pi^{x} + x^{\pi} \cdot \pi^{x} \cdot \ln(\pi)$

$2^{x} \cdot \sin(3 \cdot x)$ by differentiation, yields $2^{x} \cdot \ln(2) \cdot \sin(3 \cdot x) + 3 \cdot 2^{x} \cdot \cos(3 \cdot x)$

$\sin(x) \cdot \operatorname{asin}(x)$ by differentiation, yields $\cos(x) \cdot \operatorname{asin}(x) + \frac{\sin(x)}{\left(1 - x^{2}\right)^{\frac{1}{2}}}$

$x \cdot \operatorname{acos}(x)$ by differentiation, yields $\operatorname{acos}(x) - \frac{x}{\left(1 - x^{2}\right)^{\frac{1}{2}}}$

$\frac{\operatorname{atan}(x)}{x}$ by differentiation, yields $\frac{1}{\left(1 + x^{2}\right) \cdot x} - \frac{\operatorname{atan}(x)}{x^{2}}$

$\frac{\operatorname{asin}(x)}{\sin(x)}$ by differentiation, yields $\frac{1}{\left(1 - x^{2}\right)^{\frac{1}{2}} \cdot \sin(x)} - \frac{\operatorname{asin}(x)}{\sin(x)^{2}} \cdot \cos(x)$

part 3

$\sqrt{1 - x^{2}}$ by differentiation, yields $\frac{-x}{\left(1 - x^{2}\right)^{\frac{1}{2}}}$

$\sin\left(\sqrt{x}\right)$ by differentiation, yields $\frac{1}{2} \cdot \frac{\cos\left(x^{\frac{1}{2}}\right)}{x^{\frac{1}{2}}}$

$\ln\left(2 \cdot \sqrt{e^{x}}\right)$ by differentiation, yields $\frac{1}{2}$

$e^{\sqrt{-x}}$ by differentiation, yields $\frac{-1}{2\cdot(-x)^{\frac{1}{2}}}\cdot\exp\left[(-x)^{\frac{1}{2}}\right]$

$\operatorname{asin}\left(\sqrt{x}\right)$ by differentiation, yields $\frac{1}{2\cdot x^{\frac{1}{2}}\cdot(1-x)^{\frac{1}{2}}}$

$\sqrt{\operatorname{asin}(x)}$ by differentiation, yields $\frac{1}{2\cdot\operatorname{asin}(x)^{\frac{1}{2}}\cdot\left(1-x^2\right)^{\frac{1}{2}}}$

$\operatorname{atan}\left(\sqrt{x}\right)$ by differentiation, yields $\frac{1}{2\cdot x^{\frac{1}{2}}\cdot(x+1)}$

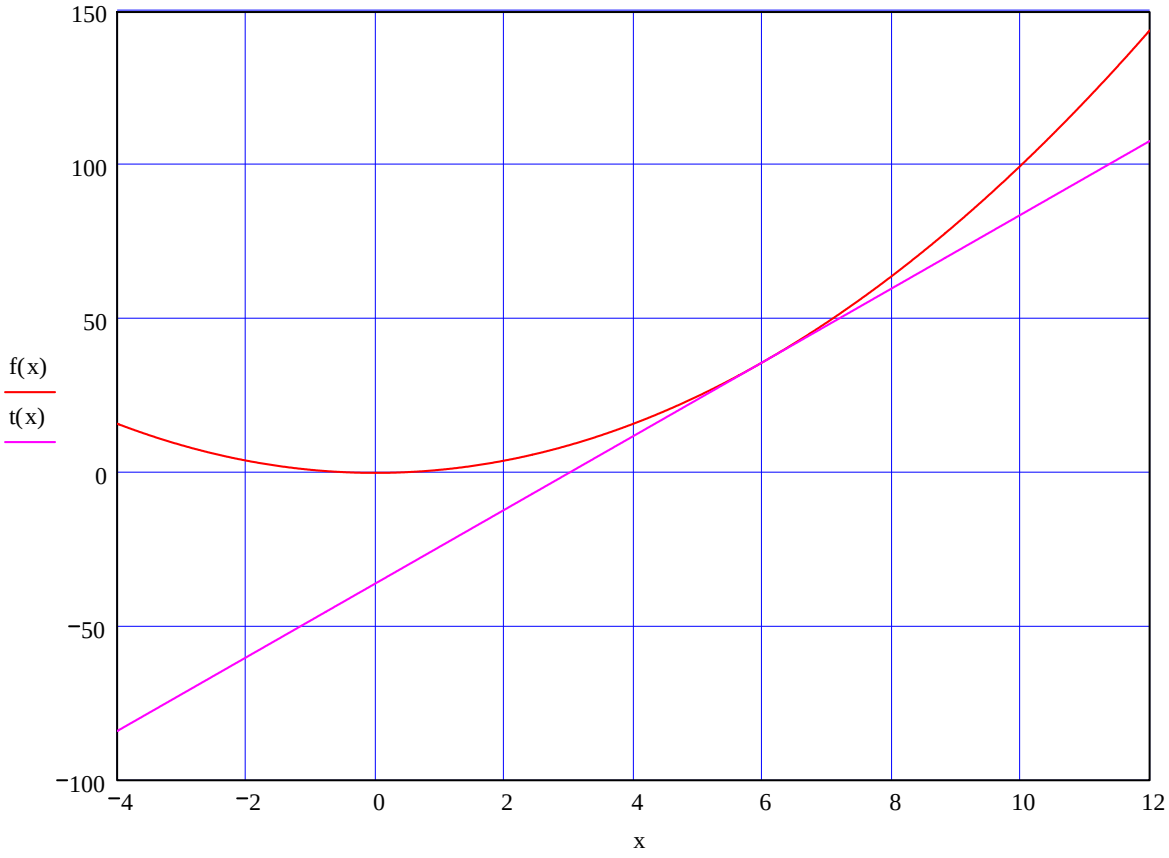
$\sqrt{\operatorname{atan}(x)}$ by differentiation, yields $\frac{1}{2\cdot\operatorname{atan}(x)^{\frac{1}{2}}\cdot\left(1+x^2\right)}$

$\left|x^2-5\cdot x+6\right|$ by differentiation, yields $(2x-5)\cdot\operatorname{sign}\left(x^2-5x+6\right)$

part 4

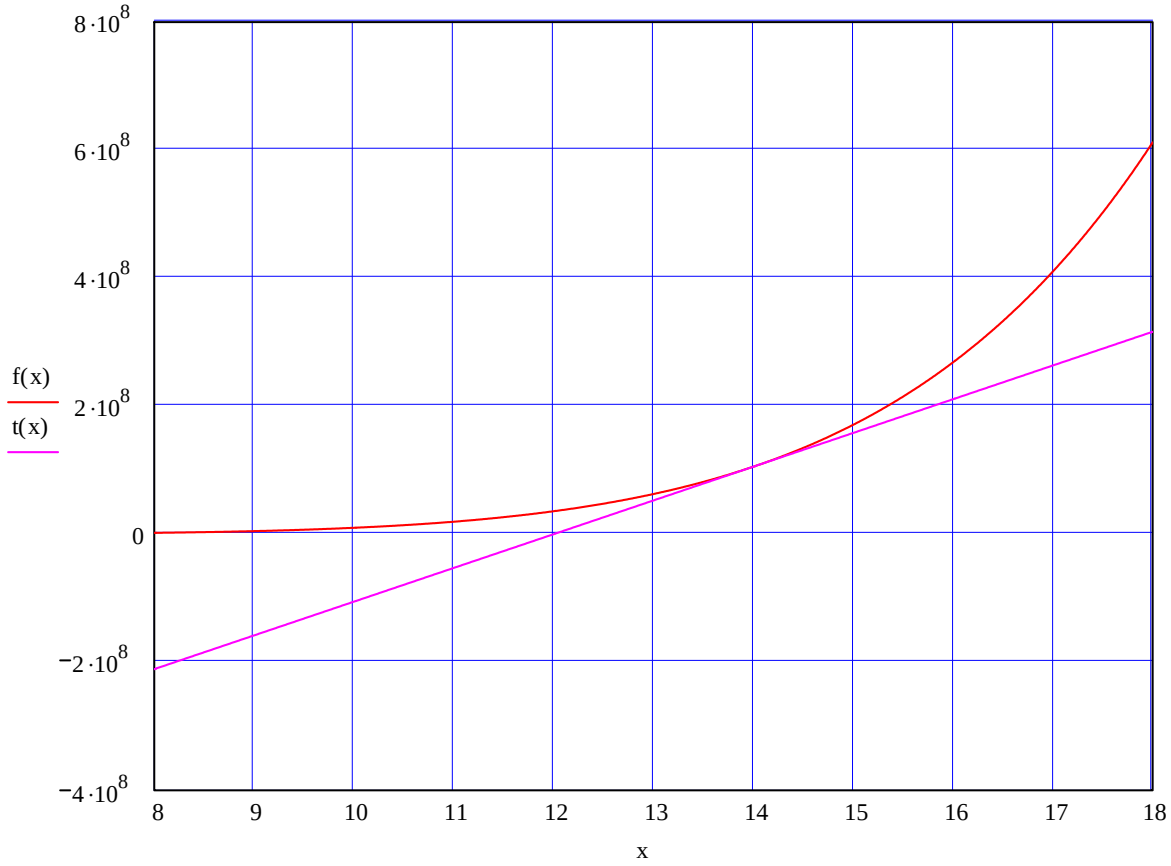
$f(x):=x^2$ $x_0:=6$ $g(x):=\frac{d}{dx}f(x)$ $t(x):=f\left(x_0\right)+g\left(x_0\right)\cdot\left(x-x_0\right)$

$t(0)=-36$ Given $t(s)=0$ Find$(s)\rightarrow 3$


150
100
50
0
−50
−100
−4
−2
0
2
4
6
8
10
12
x
f(x)
t(x)

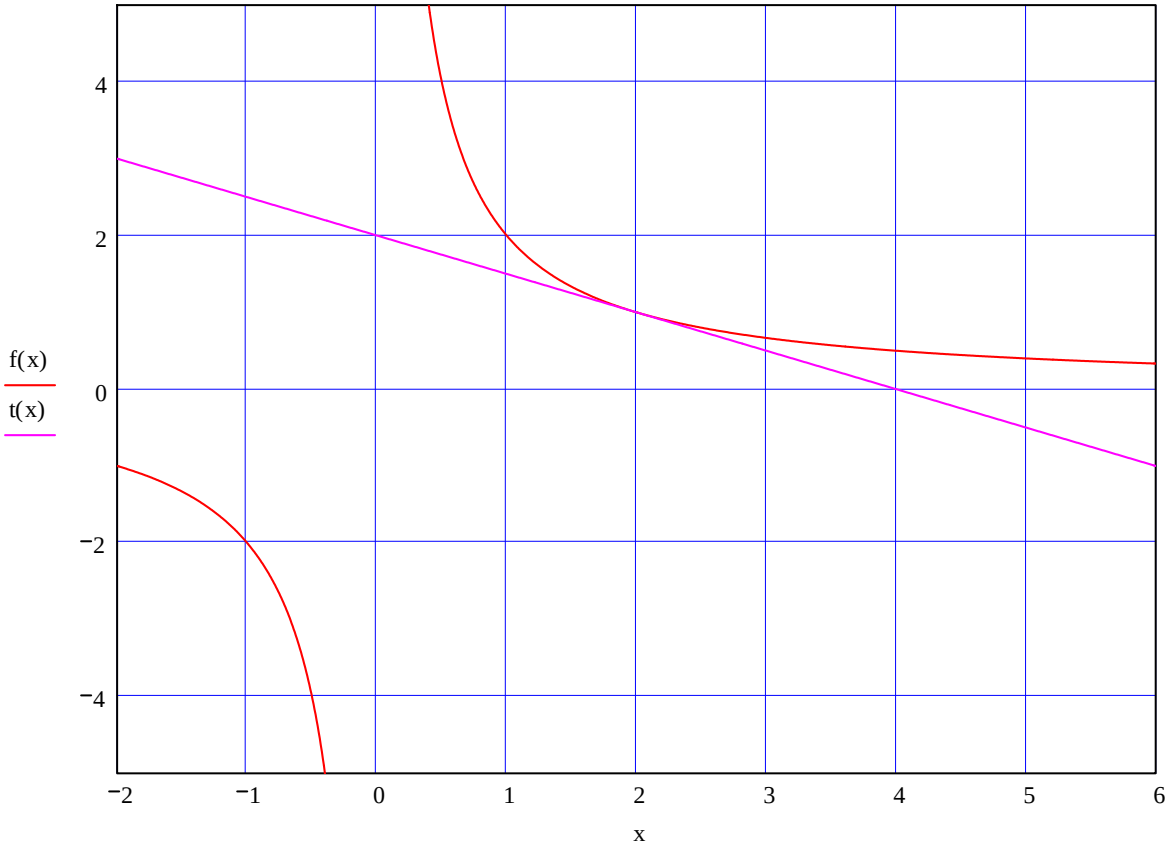
$f(x) := x^7$ $\quad x_0 := 14$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) = -632481024$ $\quad$ Given $\quad t(s) = 0$ $\quad$ Find(s) $\rightarrow 12$



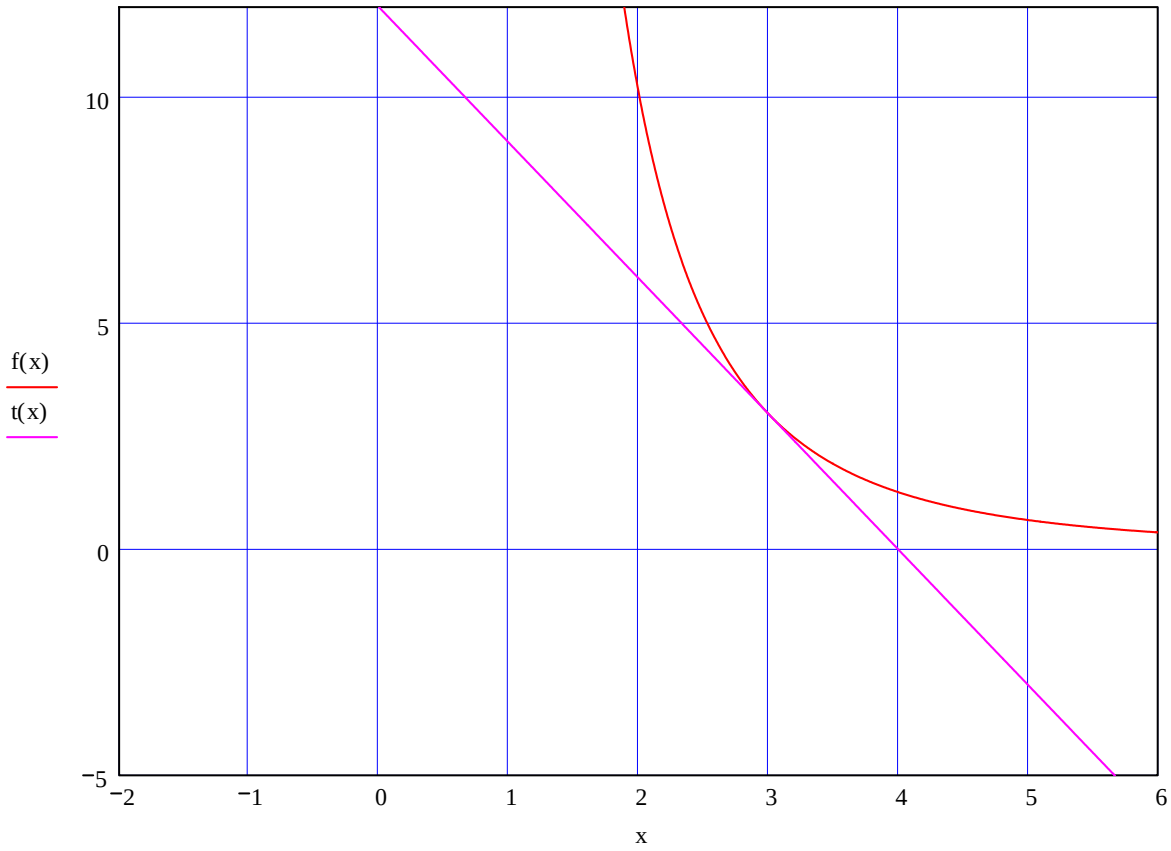
$f(x) := \frac{2}{x}$ $x_0 := 2$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) = 1.99999999999999$ Given $t(s) = 0$ Find(s) $\rightarrow 4$



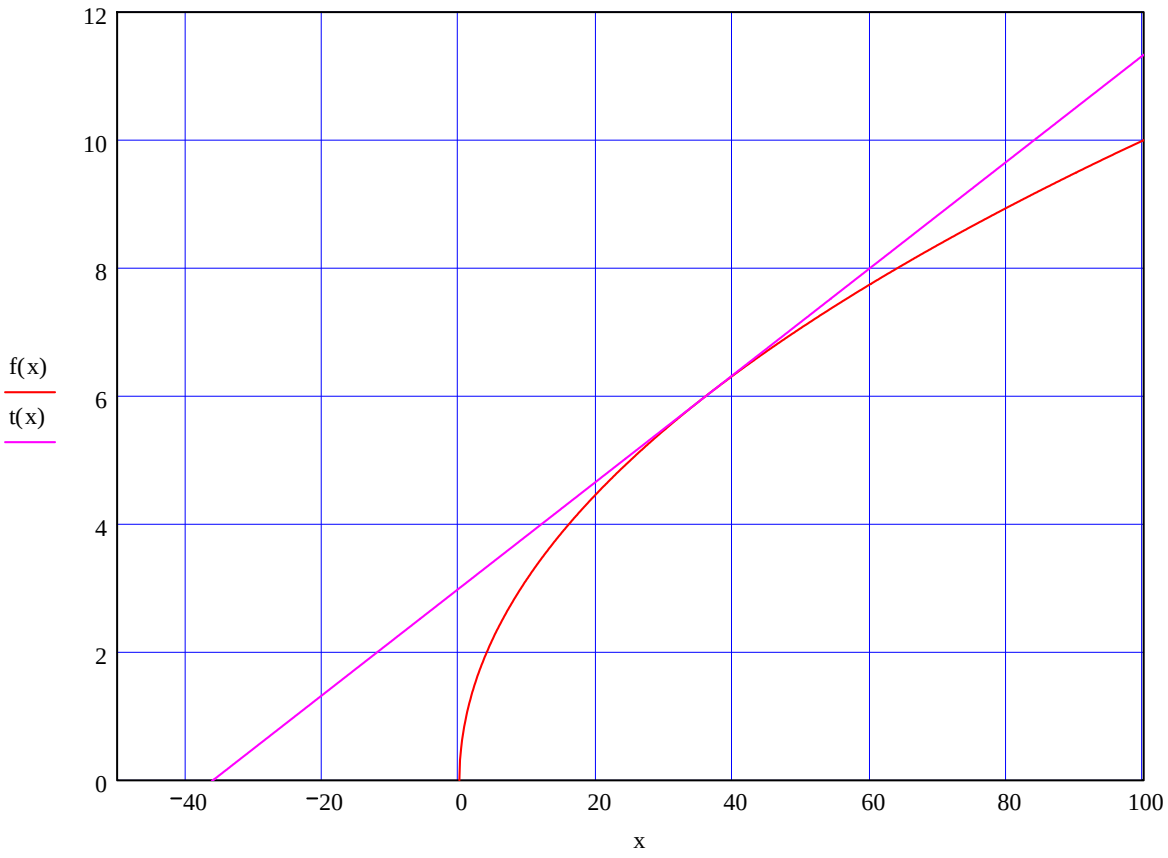
$f(x) := \frac{81}{x^3}$ $x_0 := 3$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) = 12$ Given $t(s) = 0$ Find(s) $\rightarrow 4$



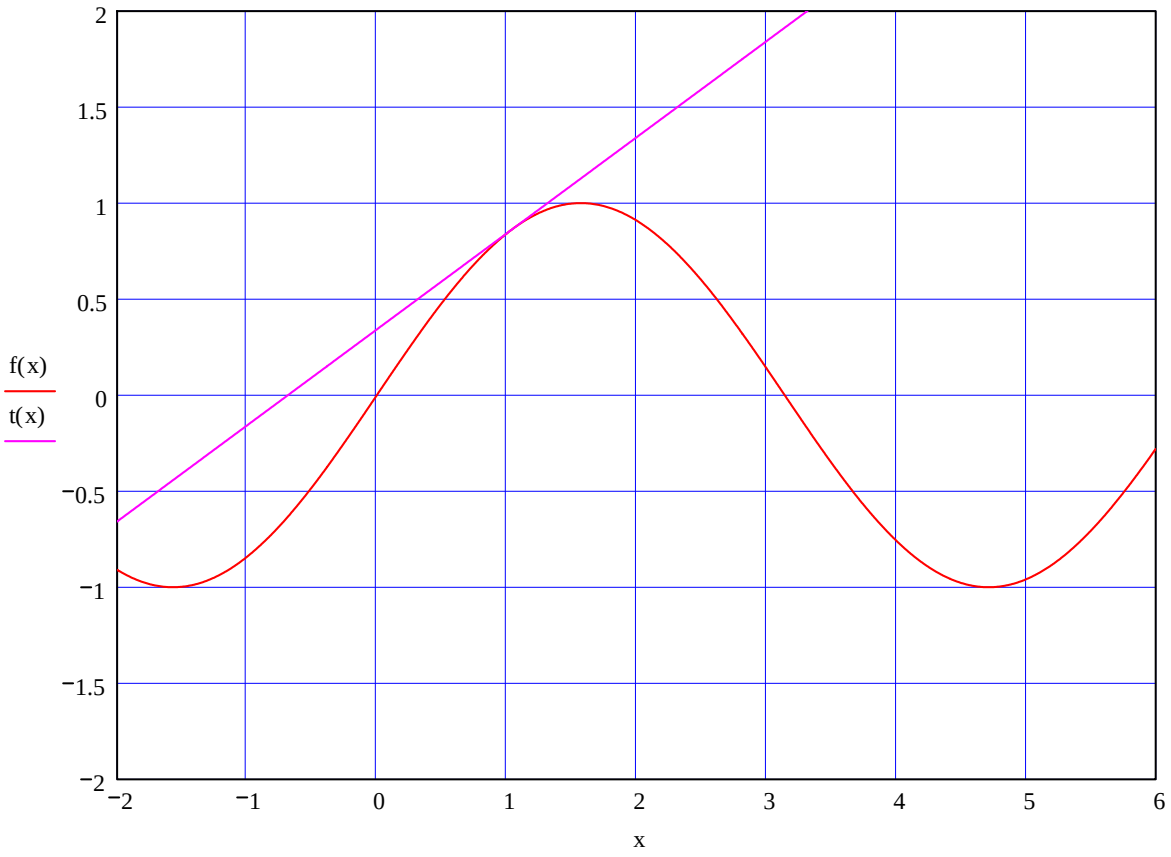
$f(x) := \sqrt{x}$ $x_0 := 36$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) = 3.00000000000002$ Given $t(s) = 0$ Find(s) $\rightarrow -36$



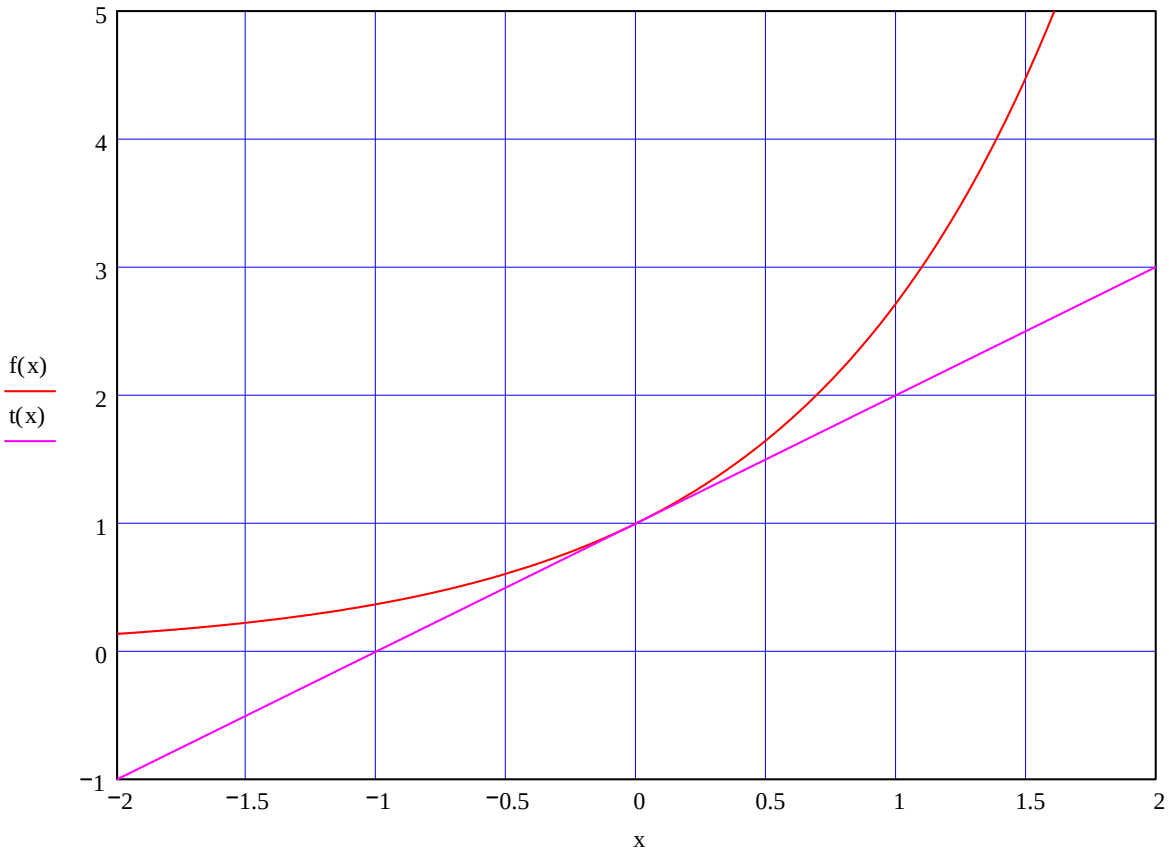
$f(x) := \sin(x)$ $\quad x_0 := \frac{\pi}{3}$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) = 0.342426628186141$ $\quad$ Given $\quad t(s) = 0$ $\quad$ Find(s) $\rightarrow -3^{\frac{1}{2}} + \frac{1}{3} \cdot \pi$



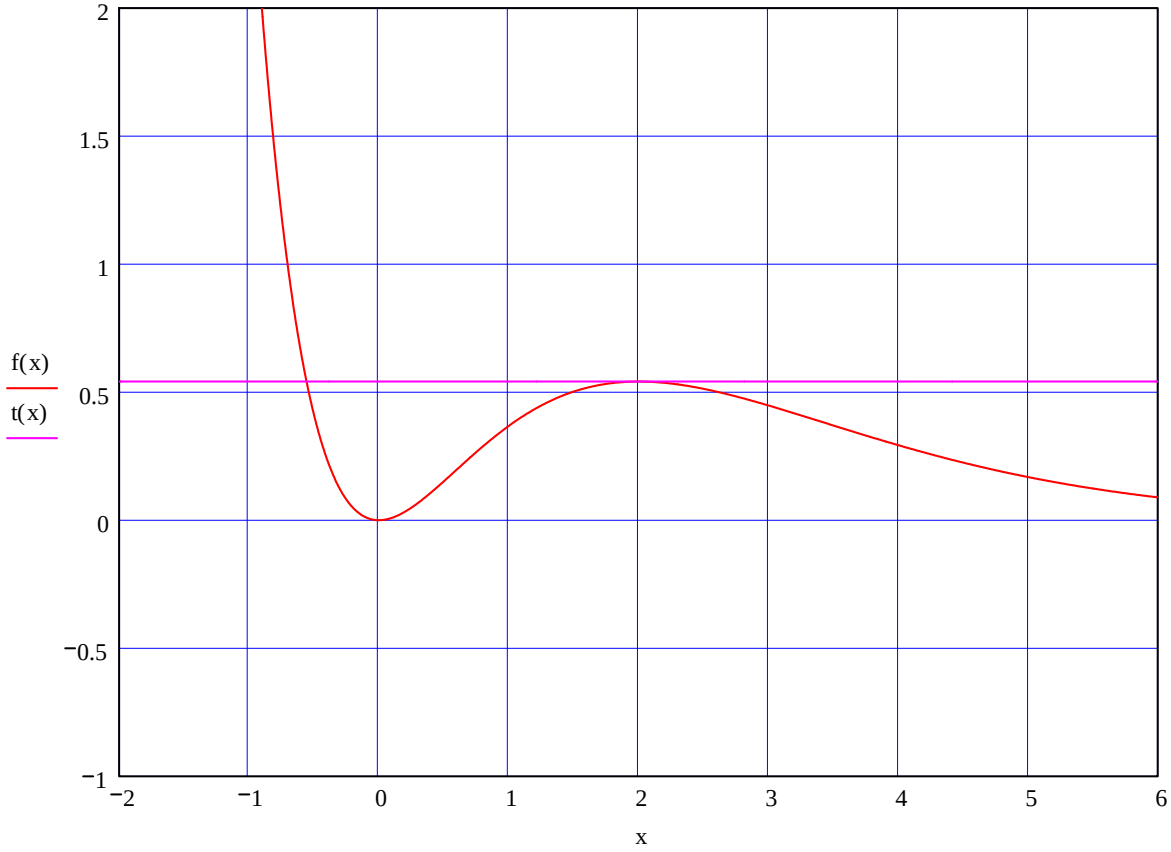
$f(x) := e^{x}$ $x_0 := 0$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) = 1$ Given $t(s) = 0$ Find(s) $\rightarrow -1$



$f(x) := x^2 \cdot e^{-x}$ $x_0 := 2$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

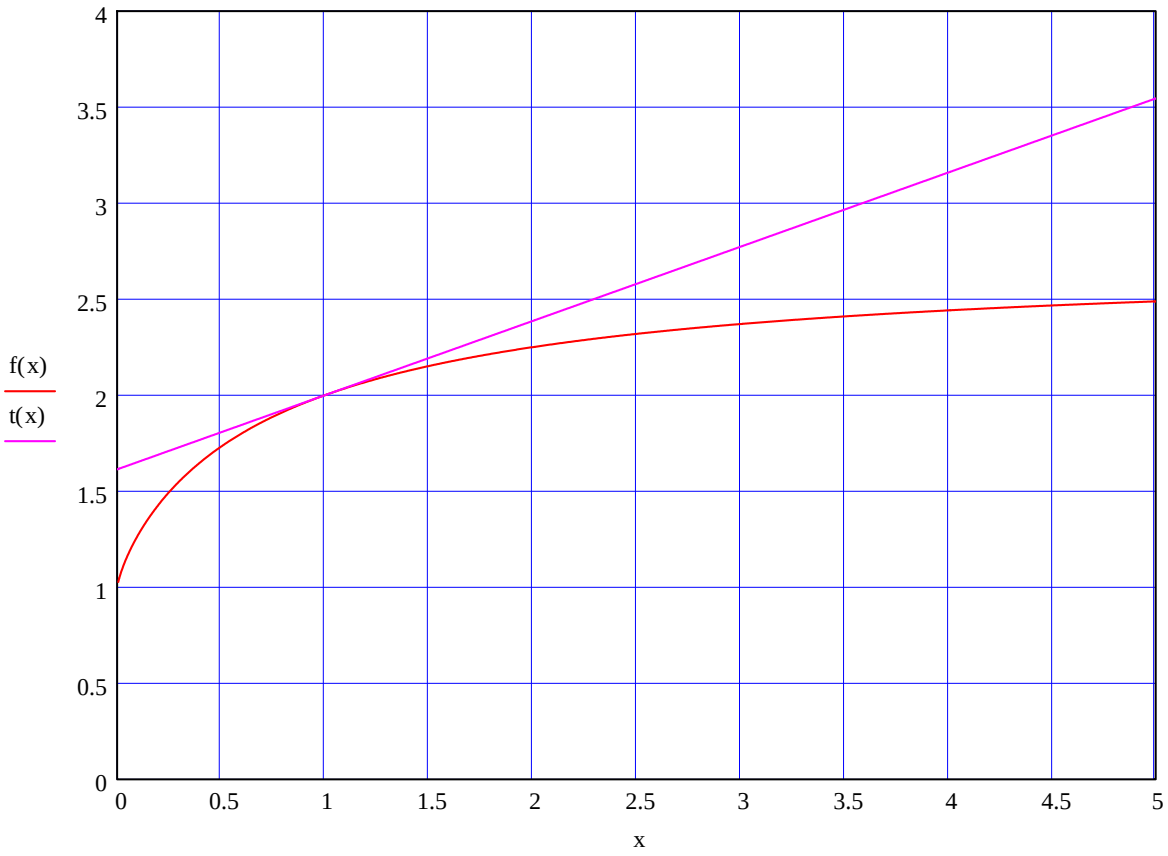
$t(0) = 0.541341132946444$ Given $t(s) = 0$ Find(s)→



$$f(x) := \left(1 + \frac{1}{x}\right)^x \qquad x_0 := 1 \qquad g(x) := \frac{d}{dx} f(x) \qquad t(x) := f(x_0) + g(x_0)\cdot(x - x_0)$$

$$t(0) \rightarrow 3 - 2\cdot\ln(2) = 1.61370563888011$$

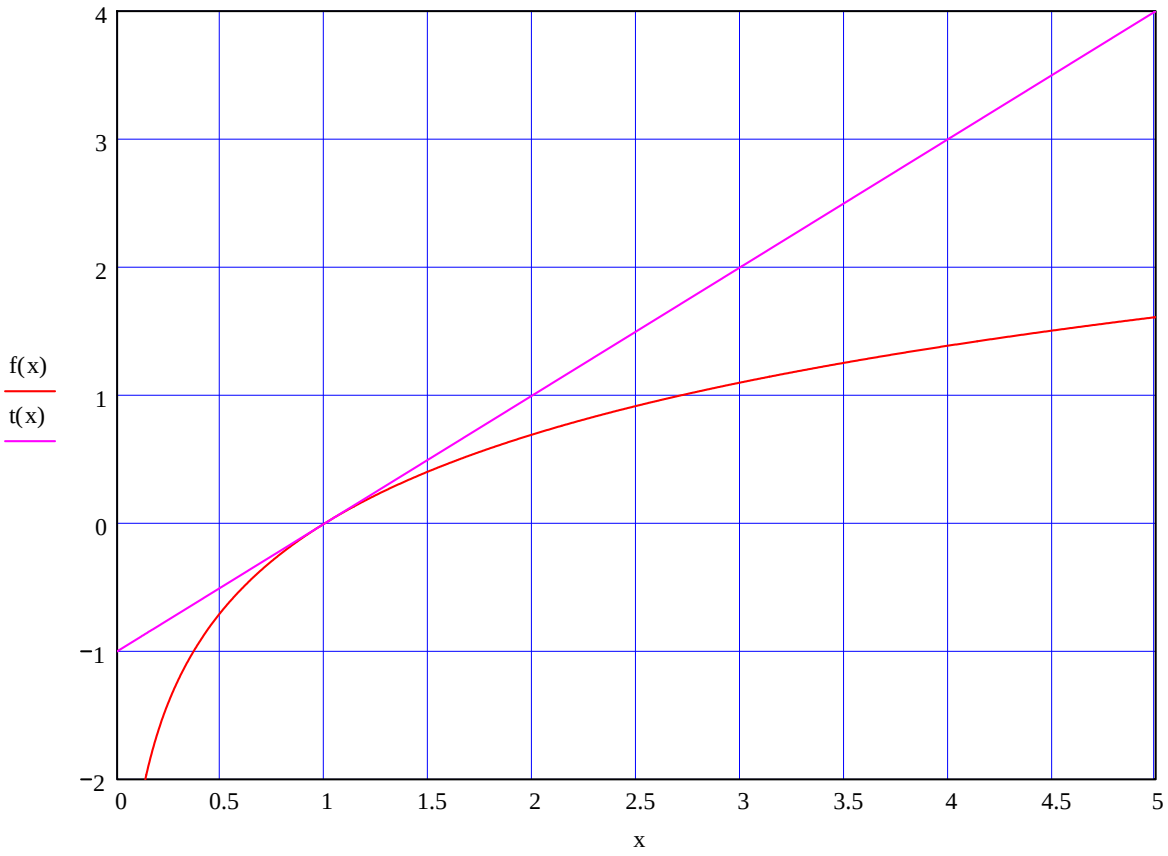
Given $\quad t(s) = 0 \quad$ Find(s) $\rightarrow \dfrac{-3 + 2\cdot\ln(2)}{2\cdot\ln(2) - 1} = -4.17739889912418$



$f(x) := \ln(x)$ $x_0 := 1$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow -1 = -1$

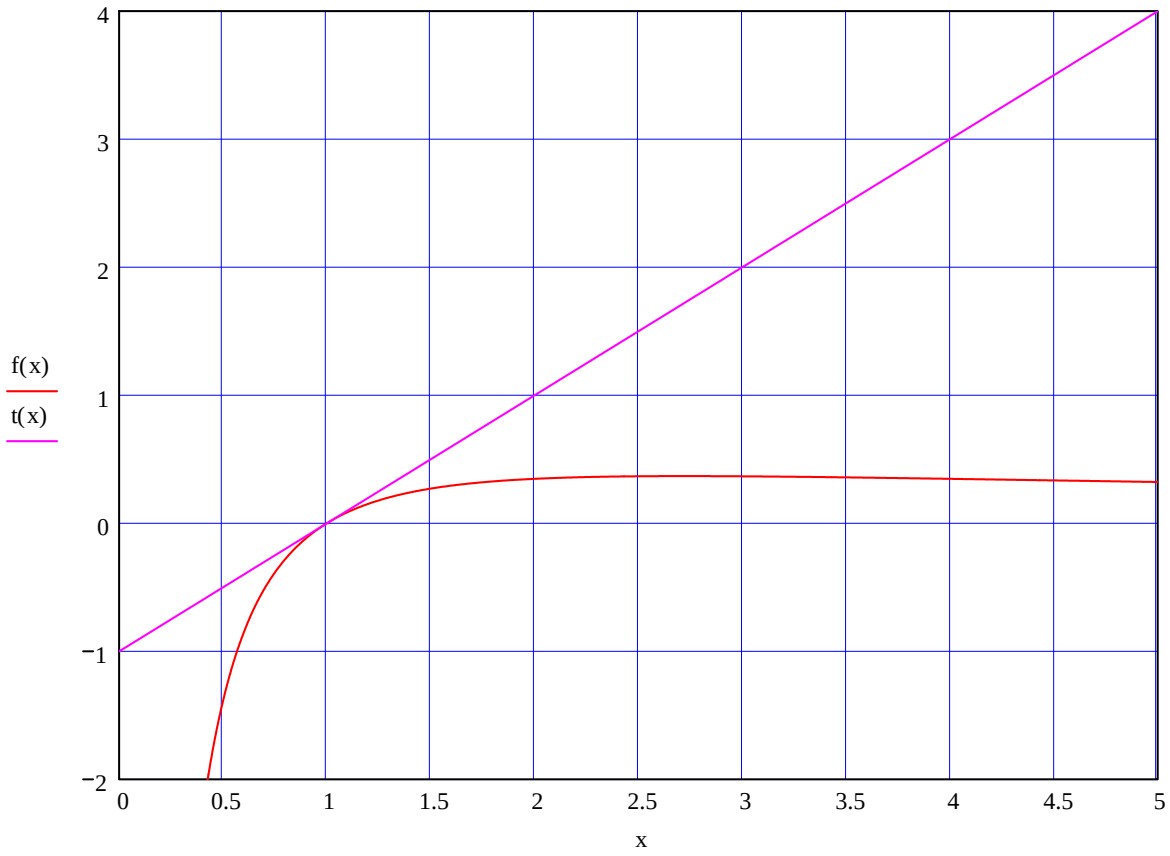
Given $t(s) = 0$ Find(s) $\rightarrow 1 = 1$



$f(x) := \frac{\ln(x)}{x}$ $x_0 := 1$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow -1 = -1$

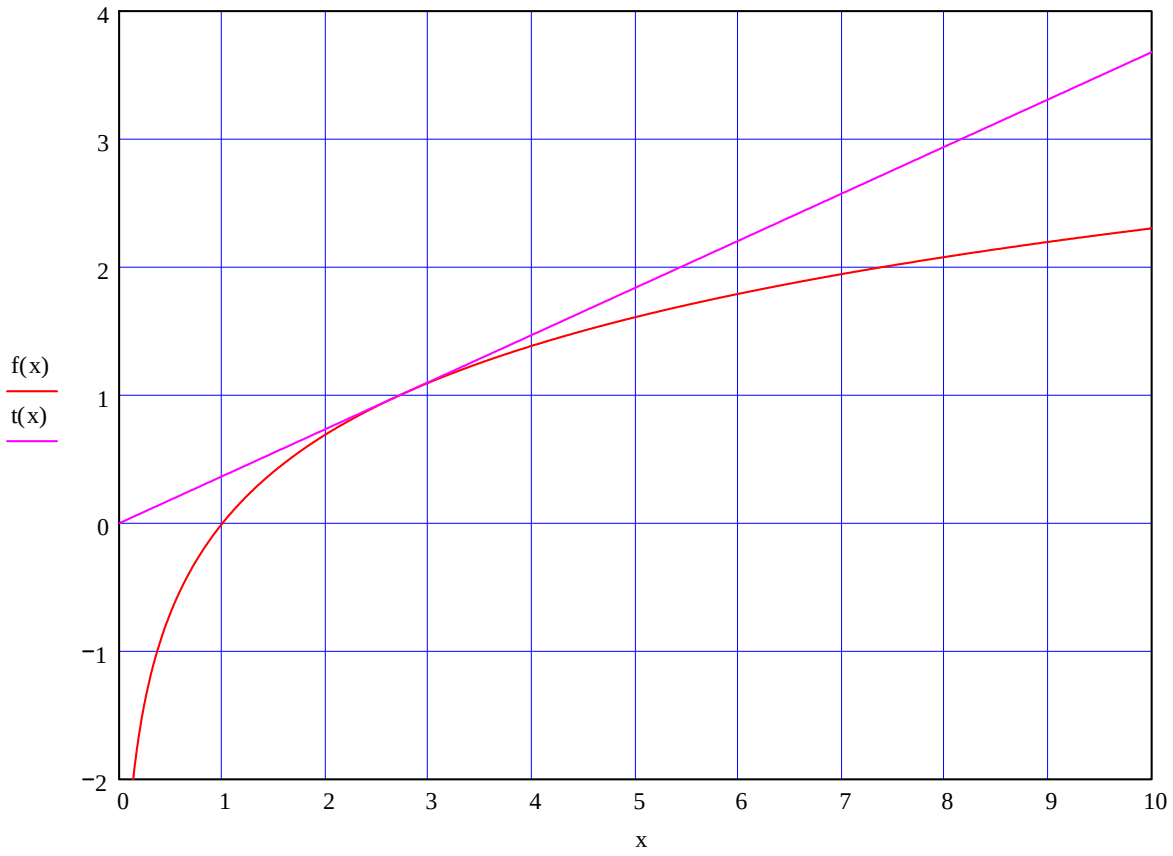
Given $t(s) = 0$ Find(s) $\rightarrow 1 = 1$



$f(x) := \ln(x)$ $x_0 := e$ $g(x) := \frac{d}{dx} f(x)$ $t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow 0 = 0$

Given $t(s) = 0$ Find(s) $\rightarrow 0 = 0$



$f(x) := \frac{x}{\ln(x)}$ $\quad x_0 := e$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

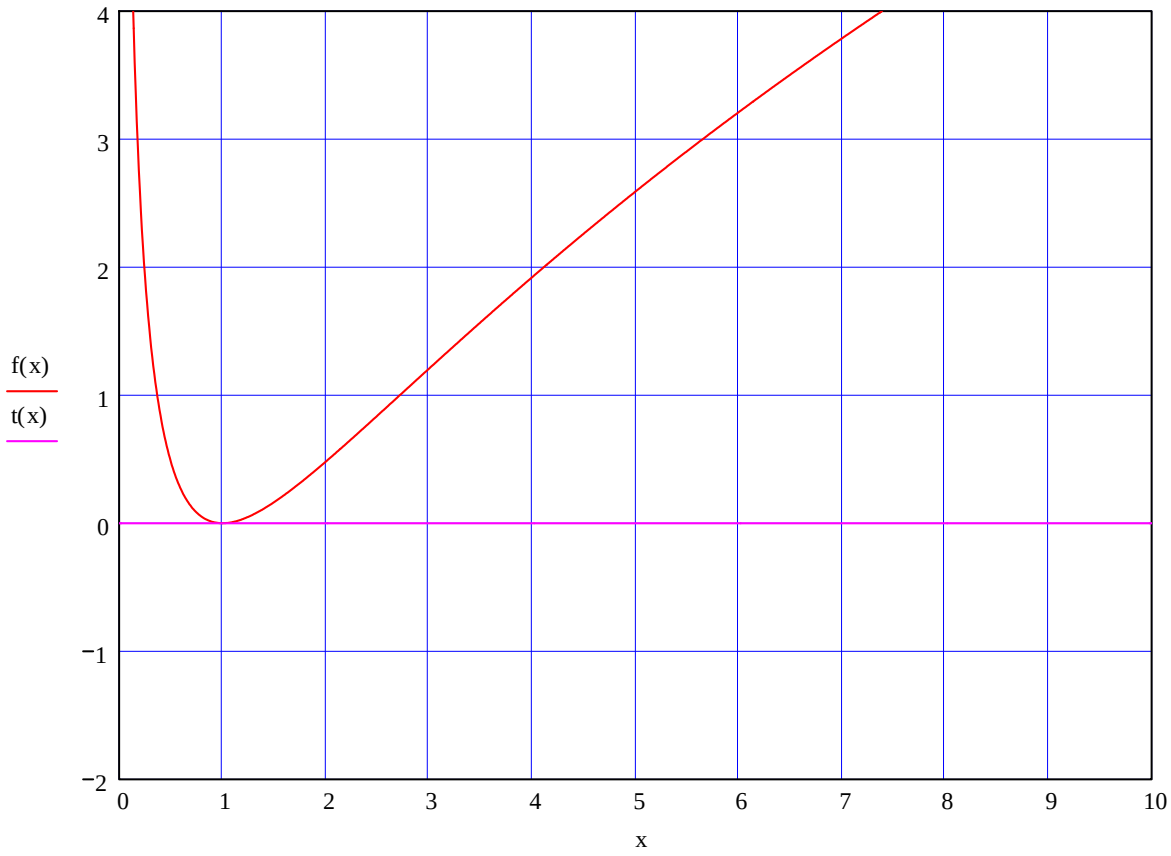
$t(0) \rightarrow \exp(1) = 2.71828182845905$

Given $\quad t(s) = 0$ $\quad$ Find(s)→ =

$f(x) := \ln(x)^2$ $\quad x_0 := 1$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow 0 = 0$

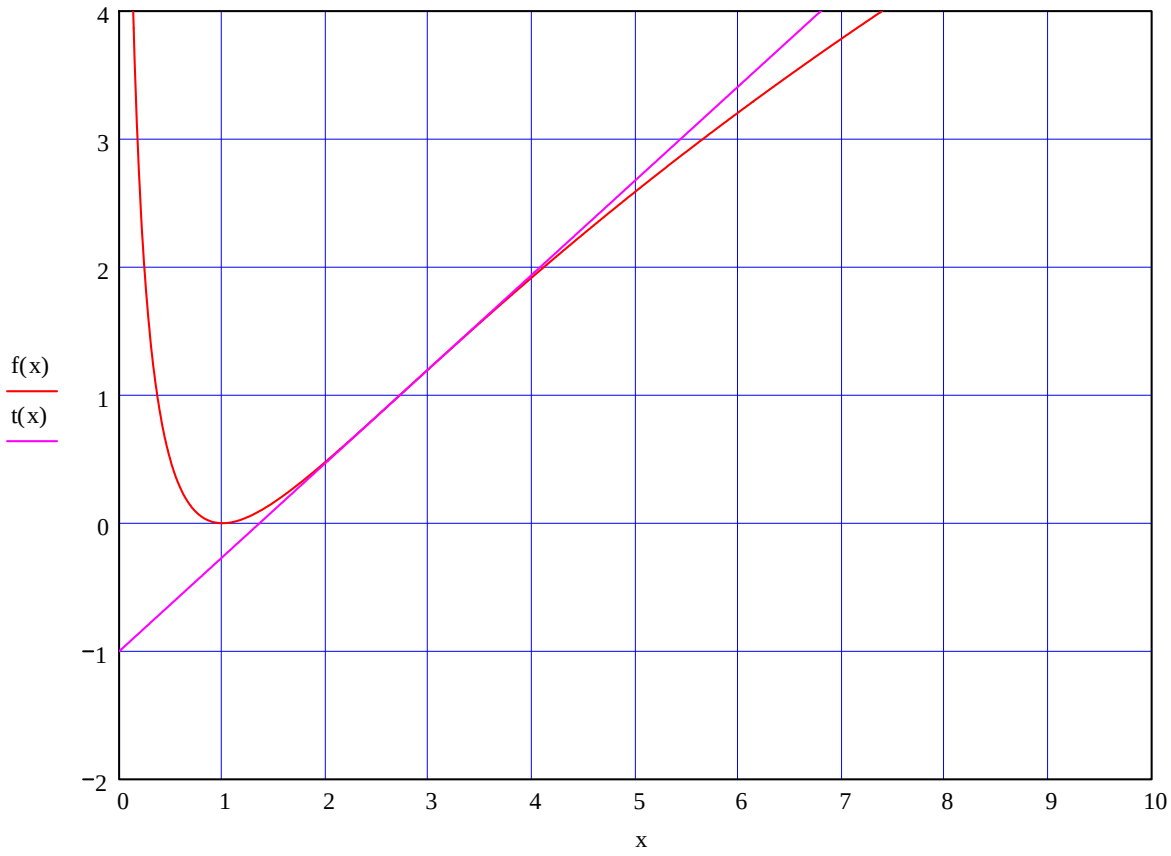
Given $\quad t(s) = 0$ $\quad$ Find(s) $\rightarrow s =$



$f(x) := \ln(x)^2$ $\quad x_0 := e$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow -1 = -1$

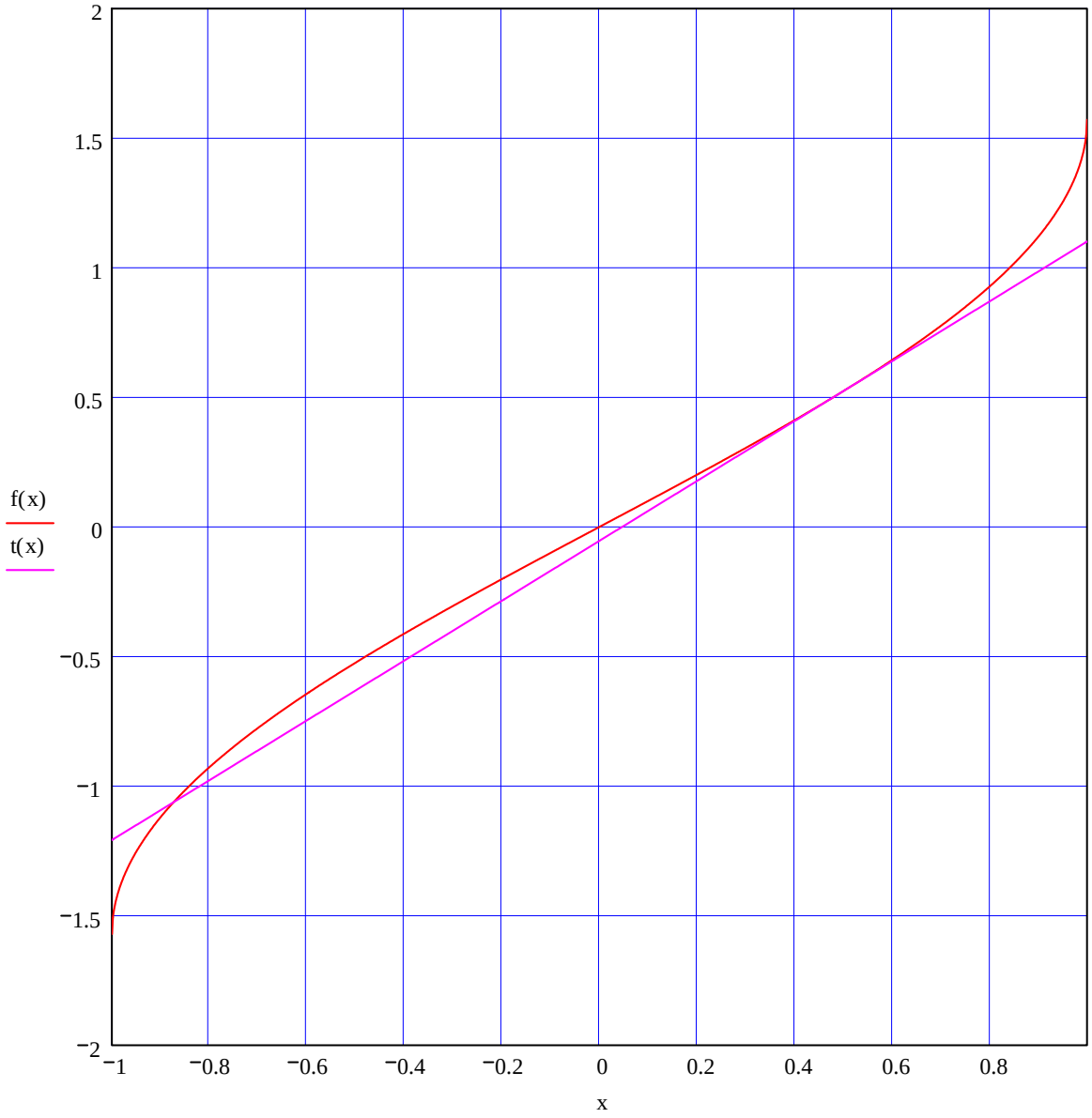
Given $\quad t(s) = 0$ $\quad \text{Find}(s) \rightarrow \frac{1}{2} \cdot \exp(1) = 1.35914091422952$



$f(x) := \operatorname{asin}(x)$ $\quad x_0 := \frac{1}{2}$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow \frac{1}{6} \cdot \pi - \frac{1}{6} \cdot 3^{\frac{1}{2}} \cdot 4^{\frac{1}{2}} = -0.053751493591327$

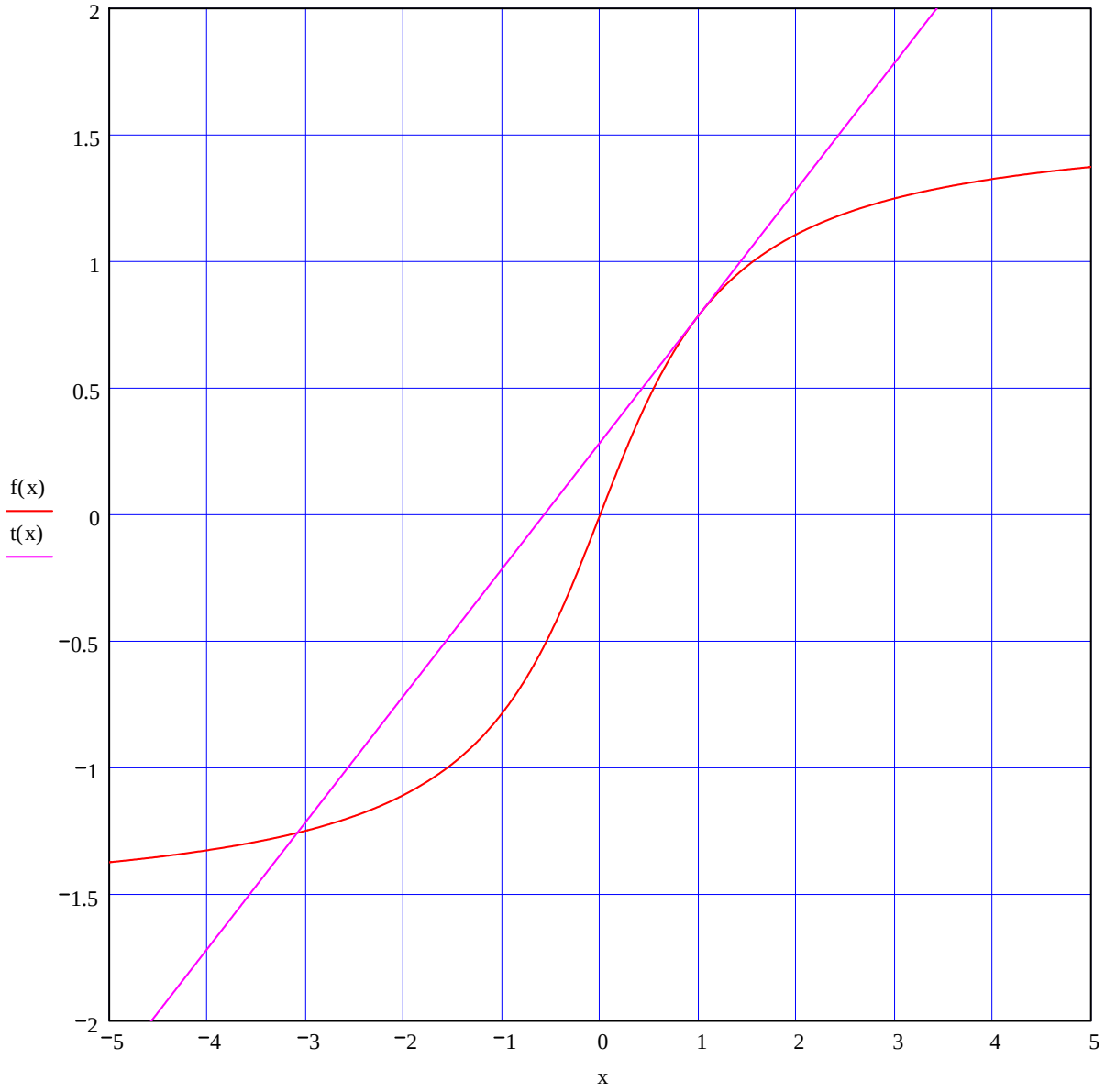
Given $\quad t(s) = 0 \quad$ Find(s) $\rightarrow \left(\frac{-1}{24} \cdot \pi + \frac{1}{24} \cdot 3^{\frac{1}{2}} \cdot 4^{\frac{1}{2}} \right) \cdot 3^{\frac{1}{2}} \cdot 4^{\frac{1}{2}} = 0.046550158941446$



$f(x) := \operatorname{atan}(x)$ $\quad x_0 := 1$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0) \cdot (x - x_0)$

$t(0) \rightarrow \frac{1}{4} \cdot \pi - \frac{1}{2} = 0.285398163397448$

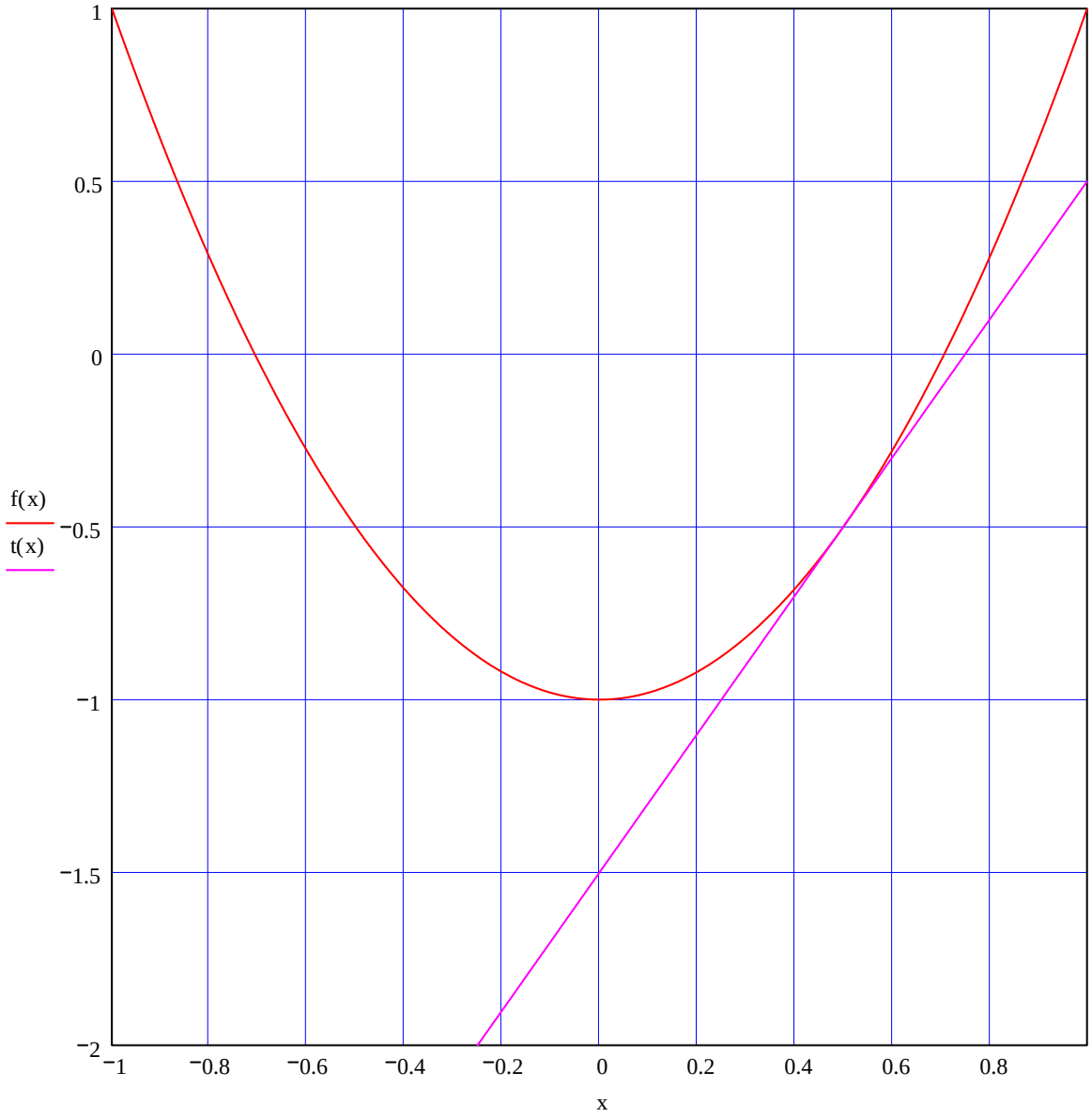
Given $\quad t(s) = 0 \quad$ Find(s) $\rightarrow \frac{-1}{2} \cdot \pi + 1 = -0.570796326794897$



$f(x) := \cos(2\,\mathrm{acos}(x))$ $\quad x_0 := \frac{1}{2}$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0)\cdot(x - x_0)$

$t(0) \rightarrow \frac{-1}{2} - \frac{1}{2}\cdot 4^{\frac{1}{2}} = -1.5$

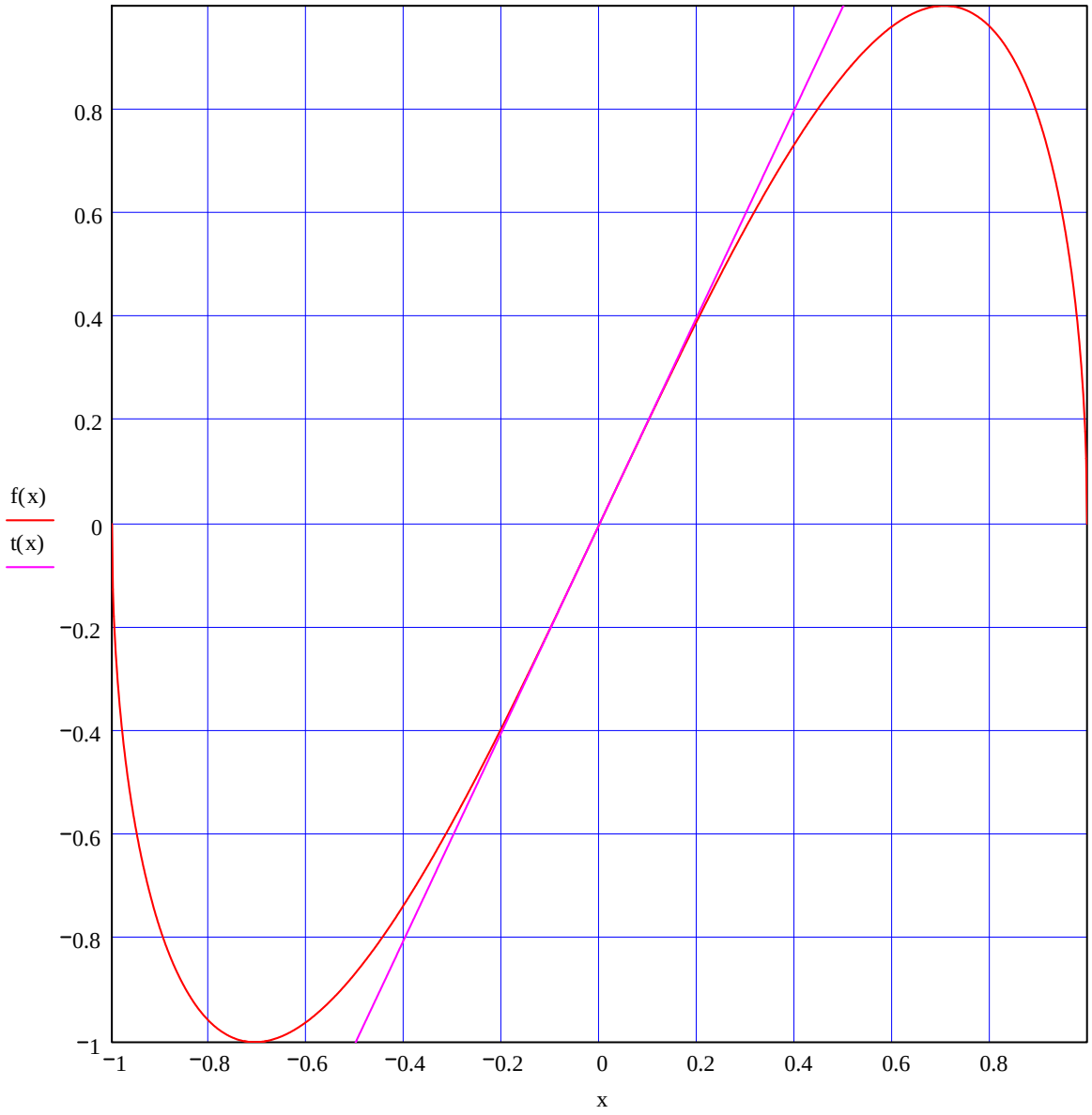
Given $\quad t(s) = 0$ $\quad \mathrm{Find}(s) \rightarrow \left(\frac{1}{8} + \frac{1}{8}\cdot 4^{\frac{1}{2}}\right)\cdot 4^{\frac{1}{2}} = 0.75$



$f(x) := \sin(2\,\operatorname{asin}(x))$ $\quad x_0 := 0$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0)\cdot(x - x_0)$

$t(0) \rightarrow 0 = 0$

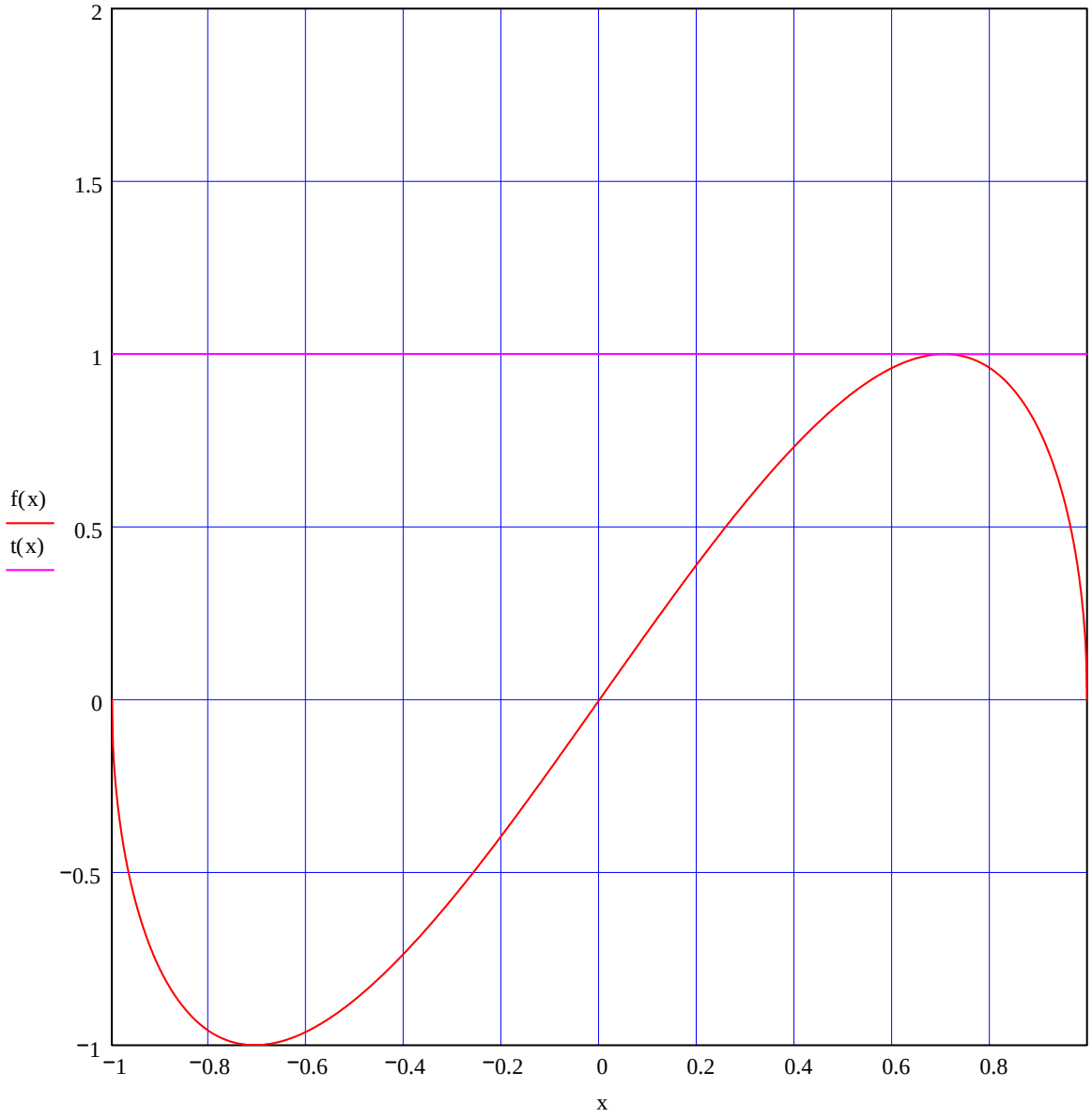
Given $\quad t(s) = 0 \quad$ Find(s) $\rightarrow 0 = 0$



$f(x) := \sin(2\,\mathrm{asin}(x))$ $\quad x_0 := \frac{1}{\sqrt{2}}$ $\quad g(x) := \frac{d}{dx} f(x)$ $\quad t(x) := f(x_0) + g(x_0)\cdot(x - x_0)$

$t(0) \rightarrow 1 = 1$

Given $\quad t(s) = 0 \quad$ Find(s)→ =



$m := 7 \quad n := m + 1 \quad k := n + 1$ $\quad f(x) := x\cdot e^{x}$

$\frac{d^m}{dx^m} f(x) \rightarrow 7\cdot\exp(x) + x\cdot\exp(x)$

$$\frac{d^{n}}{dx^{n}} f(x) \rightarrow 8\cdot\exp(x) + x\cdot\exp(x)$$

$$\frac{d^{k}}{dx^{k}} f(x) \rightarrow 9\cdot\exp(x) + x\cdot\exp(x)$$

$m := 7 \qquad n := m + 1 \qquad k := n + 1 \qquad f(x) := e^{2x}$

$$\frac{d^{m}}{dx^{m}} f(x) \rightarrow 128\cdot\exp(2\cdot x)$$

$$\frac{d^{n}}{dx^{n}} f(x) \rightarrow 256\cdot\exp(2\cdot x)$$

$$\frac{d^{k}}{dx^{k}} f(x) \rightarrow 512\cdot\exp(2\cdot x)$$

$m := 7 \qquad n := m + 1 \qquad k := n + 1 \qquad f(x) := x\cdot e^{-x}$

$$\frac{d^{m}}{dx^{m}} f(x) \rightarrow 7\cdot\exp(-x) - x\cdot\exp(-x)$$

$$\frac{d^{n}}{dx^{n}} f(x) \rightarrow -8\cdot\exp(-x) + x\cdot\exp(-x)$$

$$\frac{d^{k}}{dx^{k}} f(x) \rightarrow 9\cdot\exp(-x) - x\cdot\exp(-x)$$

$m := 7 \qquad n := m + 1 \qquad k := n + 1 \qquad f(x) := x^{2}\cdot e^{x}$

$$\frac{d^{m}}{dx^{m}} f(x) \rightarrow 42\cdot\exp(x) + 14\cdot x\cdot\exp(x) + x^{2}\cdot\exp(x)$$

$$\frac{d^{n}}{dx^{n}} f(x) \rightarrow 56\cdot\exp(x) + 16\cdot x\cdot\exp(x) + x^{2}\cdot\exp(x)$$

$$\frac{d^{k}}{dx^{k}} f(x) \rightarrow 72\cdot\exp(x) + 18\cdot x\cdot\exp(x) + x^{2}\cdot\exp(x)$$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1$

$f(x) := \sqrt{x}$

$\frac{d^m}{dx^m} f(x) \to \frac{1}{2 \cdot x^{\frac{1}{2}}} \quad \frac{d^n}{dx^n} f(x) \to \frac{-1}{4 \cdot x^{\frac{3}{2}}} \quad \frac{d^k}{dx^k} f(x) \to \frac{3}{8 \cdot x^{\frac{5}{2}}}$

$\frac{d^j}{dx^j} f(x) \to \frac{-15}{16 \cdot x^{\frac{7}{2}}} \quad \frac{d^s}{dx^s} f(x) \to \frac{105}{32 \cdot x^{\frac{9}{2}}}$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1$

$f(x) := \frac{1}{\sqrt{x}}$

$\frac{d^m}{dx^m} f(x) \to \frac{-1}{2 \cdot x^{\frac{3}{2}}} \quad \frac{d^n}{dx^n} f(x) \to \frac{3}{4 \cdot x^{\frac{5}{2}}} \quad \frac{d^k}{dx^k} f(x) \to \frac{-15}{8 \cdot x^{\frac{7}{2}}}$

$\frac{d^j}{dx^j} f(x) \to \frac{105}{16 \cdot x^{\frac{9}{2}}} \quad \frac{d^s}{dx^s} f(x) \to \frac{-945}{32 \cdot x^{\frac{11}{2}}}$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1$

$f(x) := x \cdot \ln(x)$

$\frac{d^m}{dx^m} f(x) \to \ln(x) + 1 \quad \frac{d^n}{dx^n} f(x) \to \frac{1}{x} \quad \frac{d^k}{dx^k} f(x) \to \frac{-1}{x^2}$

$\frac{d^j}{dx^j} f(x) \to \frac{2}{x^3} \quad \frac{d^s}{dx^s} f(x) \to \frac{-6}{x^4}$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1$

$f(x) := x^2 \cdot \ln(x)$

$\frac{d^m}{dx^m} f(x) \to 2 \cdot x \cdot \ln(x) + x \quad \frac{d^n}{dx^n} f(x) \to 2 \cdot \ln(x) + 3 \quad \frac{d^k}{dx^k} f(x) \to \frac{2}{x}$

$$\frac{d^{j}}{dx^{j}}f(x) \to \frac{-2}{x^{2}} \qquad \frac{d^{s}}{dx^{s}}f(x) \to \frac{4}{x^{3}}$$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1 \qquad f(x) := x^{3}\cdot\ln(x)$

$$\frac{d^{m}}{dx^{m}}f(x) \to 3\cdot x^{2}\cdot\ln(x) + x^{3} \quad \frac{d^{n}}{dx^{n}}f(x) \to 6\cdot x\cdot\ln(x) + 5\cdot x \quad \frac{d^{k}}{dx^{k}}f(x) \to 6\cdot\ln(x) + 11$$

$$\frac{d^{j}}{dx^{j}}f(x) \to \frac{6}{x} \qquad \frac{d^{s}}{dx^{s}}f(x) \to \frac{-6}{x^{2}}$$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1 \qquad f(x) := \frac{\ln(x)}{x}$

$$\frac{d^{m}}{dx^{m}}f(x) \to \frac{1}{x^{2}} - \frac{\ln(x)}{x^{2}} \quad \frac{d^{n}}{dx^{n}}f(x) \to \frac{-3}{x^{3}} + 2\cdot\frac{\ln(x)}{x^{3}} \quad \frac{d^{k}}{dx^{k}}f(x) \to \frac{11}{x^{4}} - 6\cdot\frac{\ln(x)}{x^{4}}$$

$$\frac{d^{j}}{dx^{j}}f(x) \to \frac{-50}{x^{5}} + 24\cdot\frac{\ln(x)}{x^{5}} \qquad \frac{d^{s}}{dx^{s}}f(x) \to \frac{274}{x^{6}} - 120\cdot\frac{\ln(x)}{x^{6}}$$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1 \qquad f(x) := \sin(x)$

$$\frac{d^{m}}{dx^{m}}f(x) \to \cos(x) \quad \frac{d^{n}}{dx^{n}}f(x) \to -\sin(x) \quad \frac{d^{k}}{dx^{k}}f(x) \to -\cos(x) \quad \frac{d^{j}}{dx^{j}}f(x) \to \sin(x) \quad \frac{d^{s}}{dx^{s}}f(x) \to \cos(x)$$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1 \qquad f(x) := x\cdot\sin(x)$

$$\frac{d^{m}}{dx^{m}}f(x) \to \sin(x) + x\cdot\cos(x) \quad \frac{d^{n}}{dx^{n}}f(x) \to 2\cdot\cos(x) - x\cdot\sin(x) \quad \frac{d^{k}}{dx^{k}}f(x) \to -3\cdot\sin(x) - x\cdot\cos(x)$$

$$\frac{d^{j}}{dx^{j}}f(x) \to -4\cdot\cos(x) + x\cdot\sin(x) \quad \frac{d^{s}}{dx^{s}}f(x) \to 5\cdot\sin(x) + x\cdot\cos(x)$$

$m := 1 \quad n := m + 1 \quad k := n + 1 \quad j := k + 1 \quad s := j + 1 \qquad f(x) := x\cdot\sin(2x)$

$$\frac{d^m}{dx^m} f(x) \rightarrow \sin(2\cdot x) + 2\cdot x\cdot\cos(2\cdot x)$$

$$\frac{d^n}{dx^n} f(x) \rightarrow 4\cdot\cos(2\cdot x) - 4\cdot x\cdot\sin(2\cdot x)$$

$$\frac{d^k}{dx^k} f(x) \rightarrow -12\cdot\sin(2\cdot x) - 8\cdot x\cdot\cos(2\cdot x)$$

$$\frac{d^j}{dx^j} f(x) \rightarrow -32\cdot\cos(2\cdot x) + 16\cdot x\cdot\sin(2\cdot x)$$

$$\frac{d^s}{dx^s} f(x) \rightarrow 80\cdot\sin(2\cdot x) + 32\cdot x\cdot\cos(2\cdot x)$$

$m := 1 \qquad n := m + 1 \qquad k := n + 1 \qquad j := k + 1 \qquad s := j + 1 \qquad f(x) := x^2\cdot\sin(x)$

$$\frac{d^m}{dx^m} f(x) \rightarrow 2\cdot x\cdot\sin(x) + x^2\cdot\cos(x)$$

$$\frac{d^n}{dx^n} f(x) \rightarrow 2\cdot\sin(x) + 4\cdot x\cdot\cos(x) - x^2\cdot\sin(x)$$

$$\frac{d^k}{dx^k} f(x) \rightarrow 6\cdot\cos(x) - 6\cdot x\cdot\sin(x) - x^2\cdot\cos(x)$$

$$\frac{d^j}{dx^j} f(x) \rightarrow -12\cdot\sin(x) - 8\cdot x\cdot\cos(x) + x^2\cdot\sin(x)$$

$$\frac{d^s}{dx^s} f(x) \rightarrow -20\cdot\cos(x) + 10\cdot x\cdot\sin(x) + x^2\cdot\cos(x)$$

$m := 1 \qquad n := m + 1 \qquad k := n + 1 \qquad j := k + 1 \qquad s := j + 1 \qquad f(x) := x^2\cdot\sin(2x)$

$$\frac{d^m}{dx^m} f(x) \rightarrow 2\cdot x\cdot\sin(2\cdot x) + 2\cdot x^2\cdot\cos(2\cdot x)$$

$$\frac{d^n}{dx^n} f(x) \rightarrow 2\cdot\sin(2\cdot x) + 8\cdot x\cdot\cos(2\cdot x) - 4\cdot x^2\cdot\sin(2\cdot x)$$

$$\frac{d^k}{dx^k} f(x) \rightarrow 12\cdot\cos(2\cdot x) - 24\cdot x\cdot\sin(2\cdot x) - 8\cdot x^2\cdot\cos(2\cdot x)$$

$$\frac{d^j}{dx^j} f(x) \rightarrow -48\cdot\sin(2\cdot x) - 64\cdot x\cdot\cos(2\cdot x) + 16\cdot x^2\cdot\sin(2\cdot x)$$

$$\frac{d^s}{dx^s} f(x) \rightarrow -160\cdot\cos(2\cdot x) + 160\cdot x\cdot\sin(2\cdot x) + 32\cdot x^2\cdot\cos(2\cdot x)$$