401

> $solve(\exp(2\,x)=3, x)$

$$\frac{1}{2}\ln(3) \tag{1}$$

> $fsolve(\exp(2\,x)=3, x)$

$$0.5493061443 \tag{2}$$

> $solve(\exp(-x)=4\exp(x)+1, x)$

$$\ln\left(-\frac{1}{8}-\frac{1}{8}\sqrt{17}\right), \ln\left(-\frac{1}{8}+\frac{1}{8}\sqrt{17}\right) \tag{3}$$

> $fsolve(\exp(-x)=4\exp(x)+1, x)$

$$-0.9406136421 \tag{4}$$

402

> $solve(\mathrm{sqrt}(x-8)+\mathrm{sqrt}(x)=2, x)$

> $fsolve(\mathrm{sqrt}(x-8)+\mathrm{sqrt}(x)=2, x)$

$$fsolve\left(\sqrt{x-8}+\sqrt{x}=2, x\right) \tag{5}$$

> $solve(\mathrm{sqrt}(x-8)+\mathrm{sqrt}(x)=12, x)$

$$\frac{361}{9} \tag{6}$$

> $fsolve(\mathrm{sqrt}(x-8)+\mathrm{sqrt}(x)=12, x)$

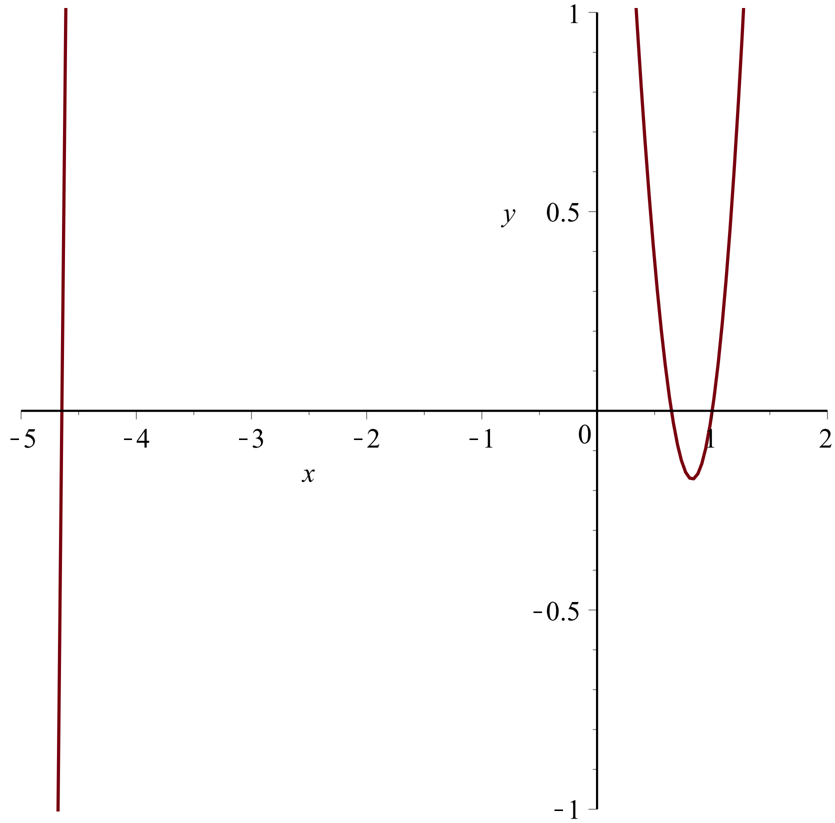
$$40.11111111 \tag{7}$$

403

> $f403 := x \rightarrow x^3+3\,x^2-7\,x+3$

$$f403 := x \rightarrow x^3+3\,x^2-7\,x+3 \tag{8}$$

> $plot(f403(x), x=-5..2, y=-1..1)$



> $fsolve(f403(x) = 0, x, x = -5..0)$

$$-4.645751311 \tag{9}$$

> $fsolve(f403(x) = 0, x, x = 0..0.9)$

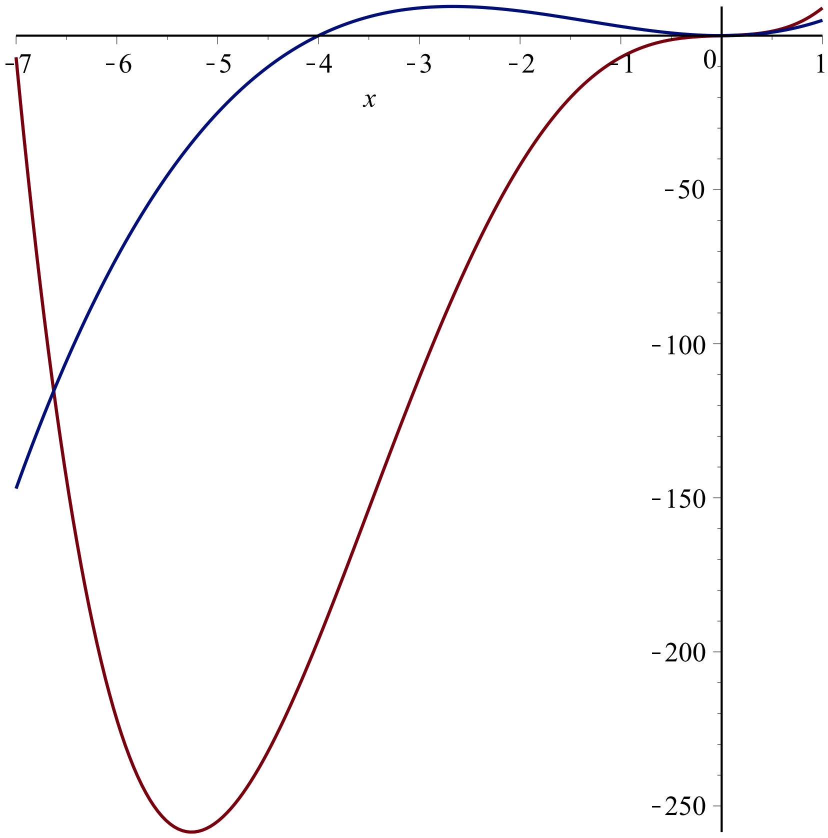
$$0.6457513111 \tag{10}$$

> $fsolve(f403(x) = 0, x, x = 0.9..2)$

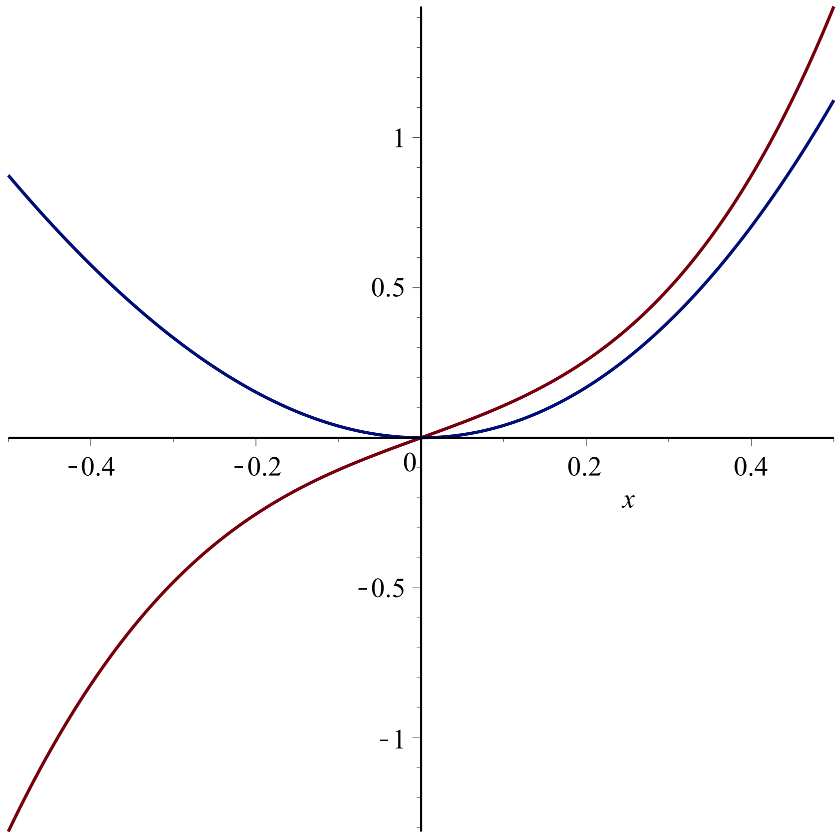
$$1. \tag{11}$$

404

> $plot([x^4 + 7x^3 + x, x^3 + 4x^2], x = -7..1)$



> $plot([x^4 + 7x^3 + x, x^3 + 4x^2], x = -0.5..0.5)$



> $Digits := 3$

$$Digits := 3 \tag{12}$$

> $fsolve(x^4 + 7x^3 + x = x^3 + 4x^2, x, x = -7..-6)$

$$-6.63 \tag{13}$$

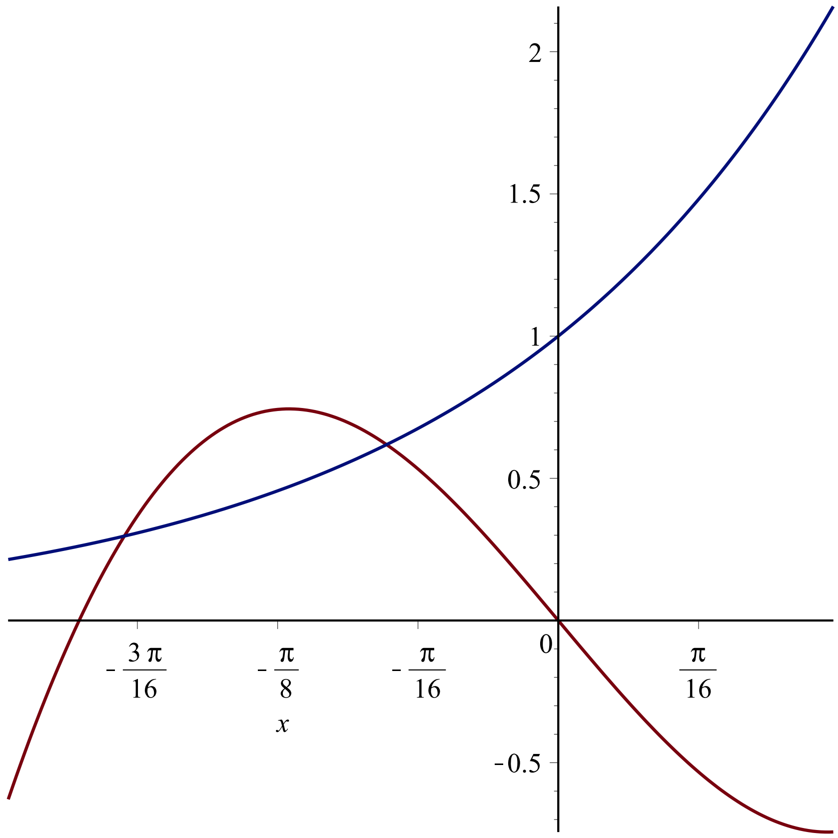
> $fsolve(x^4 + 7x^3 + x = x^3 + 4x^2, x, x = -6..5)$

$$0. \tag{14}$$

Two more solutions must be complex

405

> $plot\left(\left[3x^3 - \sin(3x), \exp(2x)\right], x = -\frac{\mathrm{Pi}}{4}..\frac{\mathrm{Pi}}{8}\right)$



> $fsolve\left(3x^3 - \sin(3x) = \exp(2x), x, x = -\frac{\text{Pi}}{4} .. -\frac{\text{Pi}}{8}\right)$

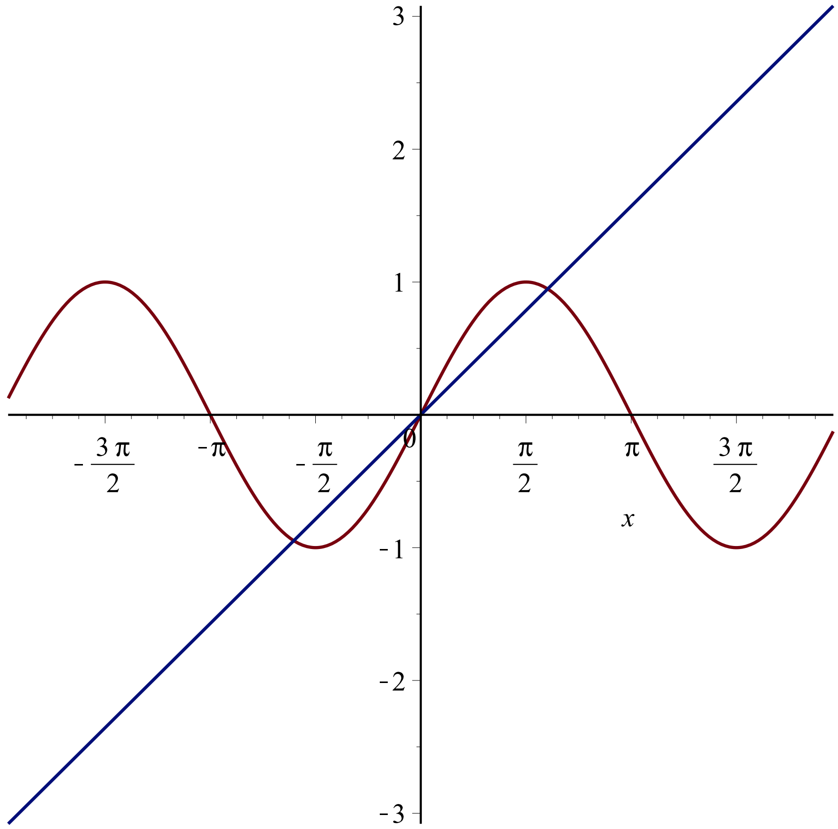
$$-0.607 \qquad (15)$$

> $fsolve\left(3x^3 - \sin(3x) = \exp(2x), x, x = -\frac{\text{Pi}}{8} .. -0\right)$

$$-0.240 \qquad (16)$$

406

> $plot\left(\left[\sin(x), \frac{x}{2}\right]\right)$

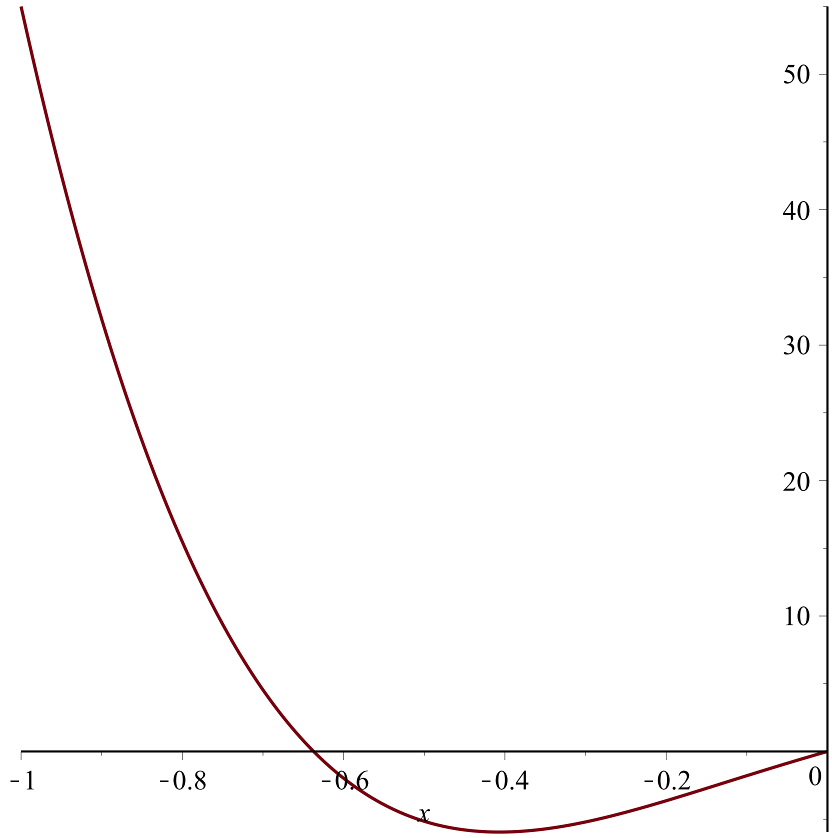


> $fsolve\left(\sin(x) = \frac{x}{2}, x, x = -\mathrm{Pi}\,..\,-\frac{\mathrm{Pi}}{2}\right)$

$$-1.90 \tag{17}$$

407

> $plot\left(23\,x^5 + 105\,x^4 - 10\,x^2 + 17\,x, x = -1\,..0\right)$



> $fsolve(23\,x^5+105\,x^4-10\,x^2+17\,x=0, x, x=-1..-0.5)$

$$-0.637 \tag{18}$$

> $fsolve(23\,x^5+105\,x^4-10\,x^2+17\,x=0, x, x=-0.5..0)$

$$0. \tag{19}$$

408

> $f408 := x \rightarrow \exp(0.2\,x)\cdot(a\cdot x^2+b\cdot x+c)$

$$f408 := x \rightarrow e^{0.2\,x}\,(a\,x^2+b\,x+c) \tag{20}$$

> $gl408 := \{f408(0)=2, f408(1)=3, f408(2)=5\}$

$$gl408 := \{1.\,c=2,\ 1.22\,a+1.22\,b+1.22\,c=3,\ 5.96\,a+2.98\,b+1.49\,c=5\} \tag{21}$$

> $solve(gl408, \{a, b, c\})$

$$\{a=0.219,\ b=0.240,\ c=2.\} \tag{22}$$

> $assign(\%)$

> $f408(x)$

$$e^{0.2\,x}\,(0.219\,x^2+0.240\,x+2.) \tag{23}$$

> $f408(-2)$

$$1.61 \tag{24}$$

409

> $solve(\{x + a\cdot y = 2, x - y = 0\}, \{x, y\})$

$$\{x = 1.64, y = 1.64\} \tag{25}$$

410

> $solve(\{(x-2)^2 + (y-3)^2 = 16, 3x - 2y = 3\}, \{x, y\})$

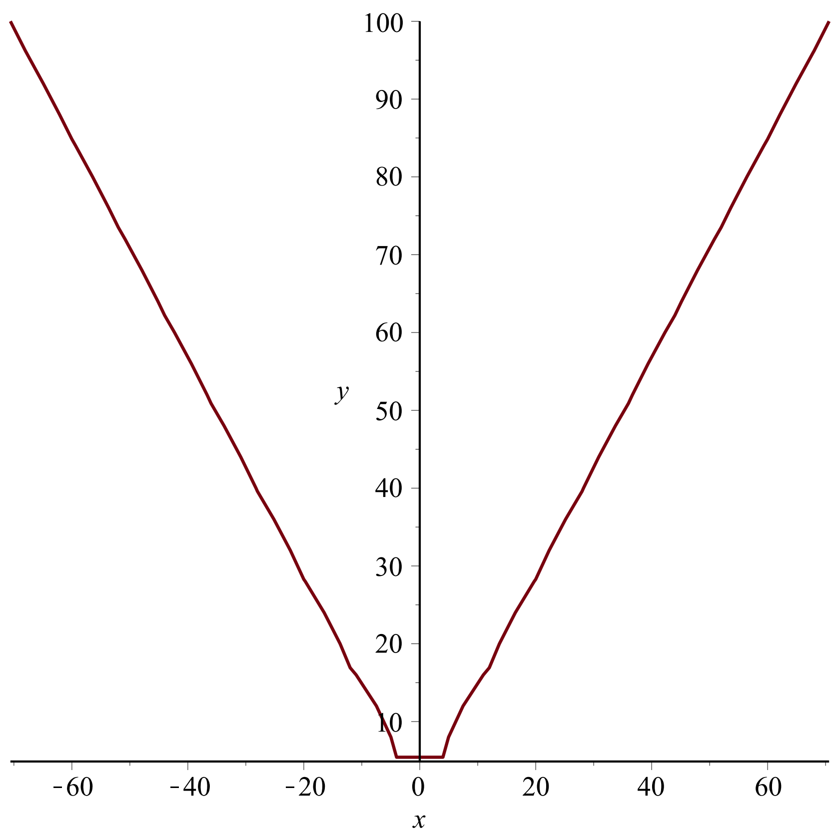
$$\left\{x = RootOf(13\_Z^2 - 70\_Z + 33), y = \frac{3}{2}\ RootOf(13\_Z^2 - 70\_Z + 33) - \frac{3}{2}\right\} \tag{26}$$

> $allvalues(\%)$

$$\left\{x = \frac{35}{13} - \frac{2}{13}\sqrt{199}, y = \frac{33}{13} - \frac{3}{13}\sqrt{199}\right\}, \left\{x = \frac{35}{13} + \frac{2}{13}\sqrt{199}, y = \frac{33}{13} + \frac{3}{13}\sqrt{199}\right\} \tag{27}$$

411

> $with(plots):$
> $pl411_1 := implicitplot(2x^2 - y^2 = -1, x = -100..100, y = 0..100):$
> $pl411_2 := implicitplot(x^4 + y^4 = 2, x = -100..100, y = 0..100):$
> $display(pl411_1, pl411_2)$



> $, solve(\{2x^2 - y^2 = -1, x^4 + y^4 = 2, y > 0\}, \{x, y\})$

$$\left\{x = \frac{1}{5}\sqrt{5}, y = \frac{1}{5}\sqrt{35}\right\}, \left\{x = -\frac{1}{5}\sqrt{5}, y = \frac{1}{5}\sqrt{35}\right\} \tag{28}$$

> $fsolve(\{2x^2 - y^2 = -1, x^4 + y^4 = 2\}, \{x, y\})$

$$\{x = 0.447, y = -1.18\} \tag{29}$$

>