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*-----*      MuPAD 2.5.3 -- The Open Computer Algebra System
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```

- `reset(): f := x ->` $\frac{a x^2 + b}{c x^4 + d x^2 + e}$

$$x -> (a * x^2 + b) / (c * x^4 + d * x^2 + e)$$

- `e1 := f(10) = 0: e2 := f(0) = -10: e3 := f'(10) = 0: e4 := f'(0) = 0: e5 := f'(5) = 1:`
- `sys := solve({e1, e2, e3, e4, e5}, {a, b, c, d, e})`

$$\left\{ \left[a = 0, b = 0, c = -\frac{d}{25}, e = 0 \right], \left[a = \frac{10d}{3}, b = -\frac{1000d}{3}, c = -\frac{d}{75}, e = \frac{100d}{3} \right] \right\}$$

- `assign(sys[2])`

$$\left[a = \frac{10d}{3}, b = -\frac{1000d}{3}, c = -\frac{d}{75}, e = \frac{100d}{3} \right]$$

- `factor(numer(f(x)))`
`factor(denom(f(x)))`

$$-\frac{250}{x^2 + 25}$$

- `limit(f(x), x = 10)`

$$-2$$

- `f(x)`

$$\frac{\frac{10d x^2}{3} - \frac{1000d}{3}}{\frac{100d}{3} + d x^2 - \frac{d x^4}{75}}$$

- `simplify(f(x))`

$$-\frac{250}{x^2 + 25}$$

- `reset(): f := x ->` $\frac{x^4 + b x^2 + c}{d x^2 + e}$;
- `e1 := f(10) = 0: e2 := f(0) = -10: e3 := f'(10) = 0: e4 := f'(0) = 0:`

- `sys := solve({e1, e2, e3, e4}, {b, c, d, e})`

$$\{[b = -200, c = 10000, e = -1000], [b = -10d - 100, c = 1000d, e = -100d]\}$$

- `assign(sys[1])`
 $[b = -200, c = 10000, e = -1000]$
- `simplify(f(x))`

$$\frac{x^4 - 200x^2 + 10000}{dx^2 - 1000}$$
- `[f(10), f'(10), f''(0)]`
 $[0, 0, 0]$
- `[f''(10), f''(0)]`

$$\left[\frac{800}{100d - 1000}, \frac{2}{5} - \frac{d}{50} \right]$$
- `/* sowohl f''(10) < 0 als auch f''(0) > 0 ist für d = 1 erfüllt */`
- `d:=1:`
- `[f(10), f(0), f(-10)]`
 $[0, -10, 0]$
- `[f'(-10), f'(0), f'(10)]`
 $[0, 0, 0]$
- `[f''(-10), f''(0), f''(10)]`

$$\left[-\frac{8}{9}, \frac{19}{50}, -\frac{8}{9} \right]$$
- `f(x)`

$$\frac{x^4 - 200x^2 + 10000}{x^2 - 1000}$$
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