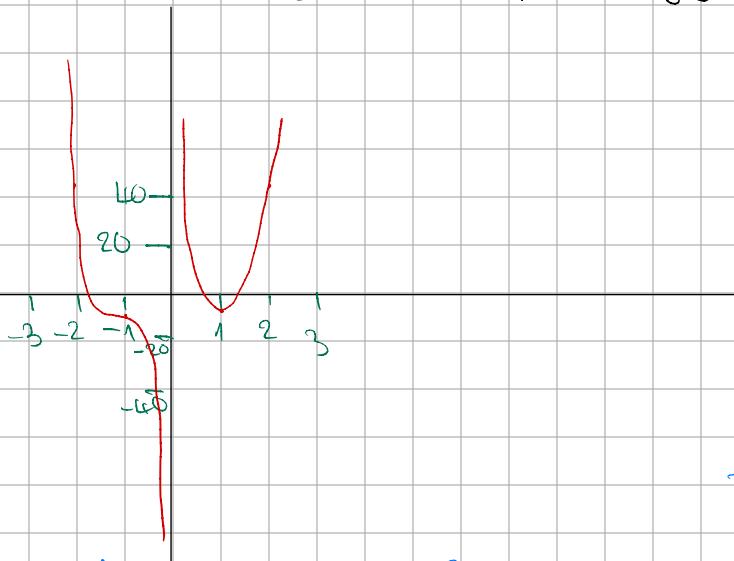


$$e = 2.71828$$

$f(x)$	-0	1	2	3	-1	-2	-3
		$e - 9$	$e^4 - 9.875$	$e^9 - 9.96$	$e^{-1} - 11$	$e^{-4} - 10.125$	$e^{-5} - 10.035$
		$\underbrace{e - 9}_{-6.28}$	$\underbrace{e^4 - 9.875}_{44.72}$	$\underbrace{e^9 - 9.96}_{8093.12}$	$\underbrace{e^{-1} - 11}_{-8.28}$	$\underbrace{e^{-4} - 10.125}_{44.45}$	$\underbrace{e^{-5} - 10.035}_{8093.05}$



$$f(x) = e^x + x^{-3} - 10$$

$$f'(x) = 2x \cdot e^x - 3x^{-4}$$

Newton-Vorfahren:

$$x_1 = 2 - \frac{e^4 + 2^{-3} - 10}{4e^4 - 3 \cdot 2^{-4}} = 1.7950$$

$$x_2 = x_1 - \frac{e^{x_1^2} + x_1^{-3} - 10}{2x_1 e^{x_1^2} - 3x_1^{-4}} = 1.6250$$

$$x_3 = 1.5308$$

$$x_4 = 1.5086$$

Vereinfachtes Newton-Vorfahren:

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

$$x_1 = 2 - \frac{e^{2^2} + 2^{-3} - 10}{4e^4 - 3 \cdot 2^4} = 1.7950$$

$$x_2 = x_1 - \frac{e^{x_1^2} + x_1^{-3} - 10}{4e^4 - 3 \cdot 2^4} = 1.7251$$

$$x_3 = 1.6802$$

$$x_4 = 1.6479$$

Sekantenverfahren:

$$x_{n+1} = x_n - \frac{x_n - x_{n-1}}{f(x_n) - f(x_{n-1})} \cdot f(x_n)$$

$$x_2 = -1.2 - \frac{-1.2 - (-1)}{f(-1.2) - f(-1)} \cdot f(-1.2) = -1.861015$$

$$f(-1) = -8.281718$$

$$f(x) = e^{x^2} + x^{-3} - 10$$

$$f(-1.2) = -6.358008$$

$$x_3 = -1.861015 - \frac{-1.861015 - (-1.2)}{f(-1.861015) - f(-1.2)} \cdot f(-1.861015)$$

$$= -1.349418$$

$$f(-1.861015) = 21.769469$$

$$x_4 = -1.349418 - \frac{-1.349418 - (-1.861015)}{f(-1.349418) - f(-1.861015)}$$

$$f(-1.349418) = -4.229382$$

$$\approx -1.432642$$