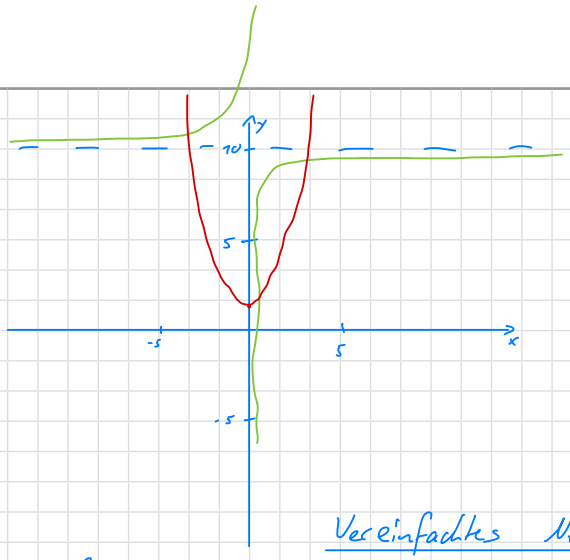
Serie 5

① $e^{x^2} + x^{-3} = 10$

Skizze → $\underbrace{e^{x^2}}_{f(x)} = \underbrace{-\frac{1}{x^3} + 10}_{g(x)}$



Newton-verfahren

$\underbrace{e^{x^2} + x^{-3} - 10}_{f(x)} = 0$

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

$x_0 = 2$
$x_1 = 1,7950$
$x_2 = 1,6651$
$x_3 = 1,5308$
$x_4 = 1,5086$

Vereinfachtes Newton Verfahren

$x_0 = 0.5$

$x_1 = 0.4847$

$x_2 = 0.4857$

$x_3 = 0.4856$

$x_4 = 0.4856$

Sekantenverfahren

$x_0 = -1.0$

$x_1 = -1,2$

$x_2 = -1,8610$

$x_3 = -1.3494$

$x_4 = -1.4326$

$x_5 = -1.5594$