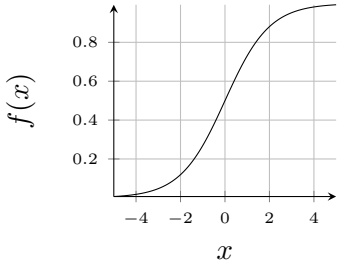
Lösungen für Übungsaufgaben
Mathematik 1 für die Übung am 7.6.24

Emanuel Schäffer

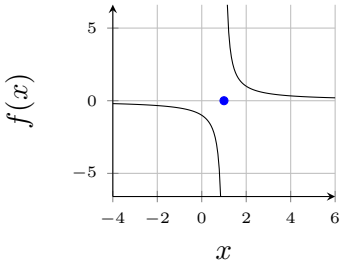
19. Juni 2024

Aufgabe 1

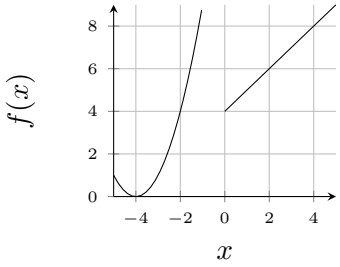
a)



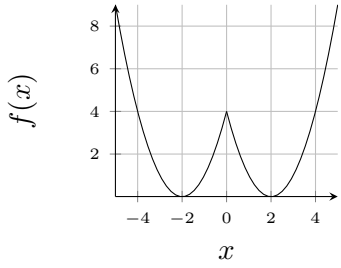
b)



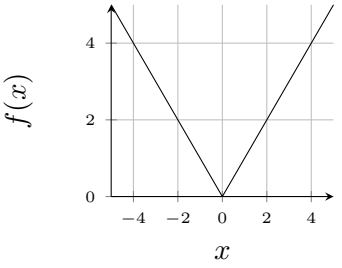
c)



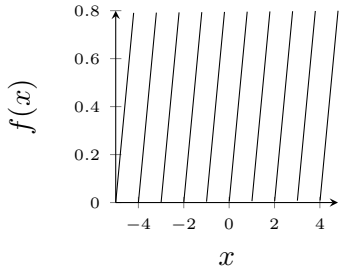
d)



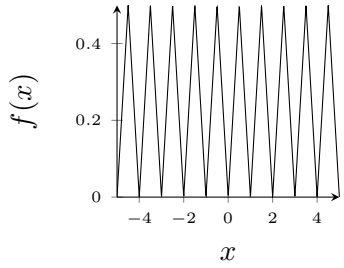
e)



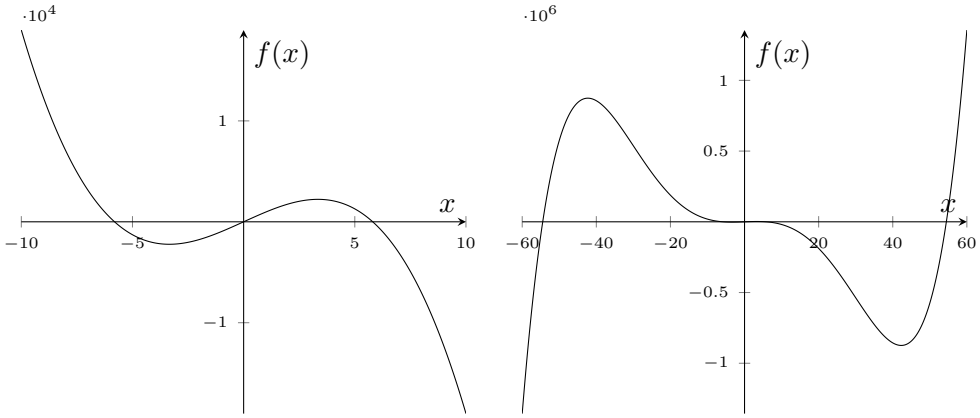
f)



g)



Aufgabe 4



Aufgabe 7

$$\left(\begin{array}{ccc|c} 10000 & 100 & 1 & 20 \\ 40000 & 200 & 1 & 80 \\ 48400 & 220 & 1 & 20 \end{array}\right) |4 \cdot I - II \quad |4.84 \cdot I - III$$

$$\left(\begin{array}{ccc|c} 10000 & 100 & 1 & 20 \\ 0 & -200 & -3 & 0 \\ 0 & -264 & -3.84 & -76.8 \end{array}\right) |1.32 \cdot II - III$$

$$\left(\begin{array}{ccc|c} 10000 & 100 & 1 & 20 \\ 0 & -200 & -3 & 0 \\ 0 & 0 & 0.12 & -76.8 \end{array}\right)$$

$0.12c = -76.8 \quad | : 0.12$

$\underline{c = -640}$

$-200b - 3\,(-640) = 0 \quad | - 1920 \quad | : -200$

$\underline{b = 9.6}$

$10000a + 100\,(9.6) - 640 = 20 \quad | - 320 \quad | : 10000$

$\underline{a = -0.03}$

$-0.03x^2 + 9.6x - 640$

Aufgabe 8

$$
\begin{array}{rrrrrl}
x^4 & -6x^3 & -24x^2 & -26x & -9 & : (x+1) = x^3 - 7x^2 - 17x - 9 \\
-(-x^4 & +x^3) & & & & \\
\hline
 & -7x^3 & -24x^2 & & & \\
 & -(-7x^3 & -7x^2) & & & \\
\hline
 & & -17x^2 & -26x & & \\
 & & -(-17x^2 & -17x) & & \\
\hline
 & & & -9x & -9 & \\
 & & & -(-9x & -9) & \\
\hline
 & & & & 0 &
\end{array}
$$

$$
\begin{array}{rrrrl}
x^3 & -7x^2 & -17x & -9 & : (x+1) = x^2 - 8x - 9 \\
-(x^3 & +x^2) & & & \\
\hline
 & -8x^2 & -17x & & \\
 & -(-8x^2 & -8x) & & \\
\hline
 & & -9x & -9 & \\
 & & -(-9x & -9) & \\
\hline
 & & & 0 &
\end{array}
$$

$\Rightarrow x_{1-3} = -1, x_4 = 9$