Übungen in Analysis ◇ Exercices en analyse ◇ Type I1 ◇ I / 2

Probl. 1 Stelle Plots her: • *Fabriquer des plots:*

(a) $f(x) = 3\,x - 4$
(b) $f(x) = \sin(\cos(x))$
(c) $f(x) = |x| - [\sin(x)]$
(d) $f(x) = [4\,x] - sgn(x)$
(e) $f(x) = \dfrac{1}{x} - \dfrac{1}{x^2}$
(f) $f(x) = \cos(x^2 + x)$
(g) $f(x) = e^{-\frac{1}{2}\,x^2}$
(h) $f(x) = e^{x^2}$
(i) $f(x) = e^{-x^2} - 1$
(j) $f(x) = 3\,\sin(\cos(2\,x^2 + 1) + x)$
(k) $f(x) = (\sin(x))^{\cos(x)}$
(l) $f(x) = ln(\dfrac{x^2 + 2}{x^4 + 2}) - x^2$
(m) $f(x) = sgn(x^2 \cdot \sin(x - \dfrac{1}{x}))$
(n) $f(x) = x^4 - 2\,x + 1$
(o) $f(x) = [10\,\sin(x)]$
(p) $f(x) = x + [\dfrac{1}{x} + x^2],\ \ D_f = [1, 10]$
(q) $f(x) = x^x,\ \ D_f = [1, \infty)$

Probl. 2 Plot: • *Plot (dessin):*

$$f(x) \quad = \quad \begin{cases} \sin(x) & x = n \in \mathbb{Z} \\ 0 & x \notin \mathbb{Z} \end{cases}$$

Probl. 3 Zeichne in Polarkoordinaten: • *Dessiner en coordonnées polaires:*

(a) $r(\varphi) = 2 \cdot \cos(2\,\varphi)$
(b) $r(\varphi) = 2 \cdot \cos(2\,\varphi + 1)$
(c) $r(\varphi) = 4 + 2 \cdot \sin(4\,\varphi) + \cos(16\,\varphi)$
(d) $r(\varphi) = 1 + \dfrac{\varphi}{2} - \dfrac{\varphi^2}{4},\ \ \varphi \in [0, 2\,\pi)$

Probl. 4 Sei • *Soit* $f(x) = x^2 - x + 1,\ \ g(x) = -\dfrac{1}{2}\,x^2 + x + 2$

$\rightsquigarrow$ Löse: • *Résoudre:* $f(x) \geq g(x)$

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