

Übungen

Bestimme die Extrempunkte, soweit sie vorhanden sind.

$$\begin{aligned}1. \quad f(x) &= 3x^4 - 16x^3 + 6x^2 - 48x \\ f'(x) &= 12x^3 - 48x^2 + 12x - 48 \\ f''(x) &= 36x^2 - 96x + 12\end{aligned}$$

$$\begin{aligned}2. \quad f(x) &= x^3 - 9x^2 + 27x - 25 \\ f'(x) &= 3x^2 - 18x + 27 \\ f''(x) &= 6x - 18\end{aligned}$$

$$\begin{aligned}3. \quad f(x) &= x^5 - x^3 \\ f'(x) &= 5x^4 - 3x^2 \\ f''(x) &= 20x^3 - 6x\end{aligned}$$

$$\begin{aligned}4. \quad f(x) &= \frac{2}{3}x^3 + x^2 - 7,5x - 12 \\ f'(x) &= 2x^2 + 2x - 7,5 \\ f''(x) &= 4x + 2\end{aligned}$$

$$\begin{aligned}5. \quad f(x) &= 0,25x^4 - 4,5x^2 + 5 \\ f'(x) &= x^3 - 9x \\ f''(x) &= 3x^2 - 9\end{aligned}$$

$$\begin{aligned}6. \quad f(x) &= \frac{1}{6}x^3 + x^2 + x \\ f'(x) &= \frac{1}{2}x^2 + 2x + 1 \\ f''(x) &= x + 2\end{aligned}$$

$$\begin{aligned}7. \quad f(x) &= x + \frac{1}{x^2} \\ f'(x) &= 1 - x^{-3} \\ f''(x) &= 2x^{-4}\end{aligned}$$

$$\begin{aligned}8. \quad f(x) &= a \cdot x^3 - 4x^2 \\ f'(x) &= 3a \cdot x^2 - 8x \\ f''(x) &= 6a \cdot x - 8\end{aligned}$$