



Mathematik-Übungsblatt mit Lösungen von www.worksheeps.de / www.mathe-aufgaben.net
Mathe-Aufgaben mit Lösungen einfach schnell selbst erstellen.

Kettenregel

1) $f(x) = (-4)x + (11x^2 - 11)^{33}$

$$f'(x) = (-4) + 726x \cdot (11x^2 - 11)^{32}$$
$$f''(x) = 726 \cdot (11x^2 - 11)^{32} + 511104x^2 \cdot (11x^2 - 11)^{31}$$

2) $f(x) = (1x + (-11))^{\sqrt{8}} + 5$

$$f'(x) = 1 \cdot \sqrt{8} \cdot (1x + (-11))^{\sqrt{8}-1}$$
$$f''(x) = 1 \cdot (8 - \sqrt{8}) \cdot (1x + (-11))^{\sqrt{8}-2}$$

3) $f(x) = ((-13)x + (-7))^{\sqrt{17}} + (-19)$

$$f'(x) = (-13) \cdot \sqrt{17} \cdot ((-13)x + (-7))^{\sqrt{17}-1}$$
$$f''(x) = 169 \cdot (17 - \sqrt{17}) \cdot ((-13)x + (-7))^{\sqrt{17}-2}$$

4) $f(x) = (-9)x + (4x^2 - (-13))^{24}$

$$f'(x) = (-9) + 192x \cdot (4x^2 - (-13))^{23}$$
$$f''(x) = 192 \cdot (4x^2 - (-13))^{23} + 35328x^2 \cdot (4x^2 - (-13))^{22}$$

5) $f(x) = (10x + (-20))^{\sqrt{3}} + 11$

$$f'(x) = 10 \cdot \sqrt{3} \cdot (10x + (-20))^{\sqrt{3}-1}$$
$$f''(x) = 100 \cdot (3 - \sqrt{3}) \cdot (10x + (-20))^{\sqrt{3}-2}$$

6) $f(x) = 4x + ((-16)x^2 - 12)^4$

$$f'(x) = 4 + (-128)x \cdot ((-16)x^2 - 12)^3$$
$$f''(x) = (-128) \cdot ((-16)x^2 - 12)^3 + 12288x^2 \cdot ((-16)x^2 - 12)^2$$

7) $f(x) = 10x + ((-2)x^2 - (-18))^{14}$

$$f'(x) = 10 + (-56)x \cdot ((-2)x^2 - (-18))^{13}$$
$$f''(x) = (-56) \cdot ((-2)x^2 - (-18))^{13} + 2912x^2 \cdot ((-2)x^2 - (-18))^{12}$$

8) $f(x) = (-11)x + (16x^2 - 5)^{47}$

$$f'(x) = (-11) + 1504x \cdot (16x^2 - 5)^{46}$$
$$f''(x) = 1504 \cdot (16x^2 - 5)^{46} + 2213888x^2 \cdot (16x^2 - 5)^{45}$$

9) $f(x) = 13x + (6x^2 - 18)^{28}$

$$f'(x) = 13 + 336x \cdot (6x^2 - 18)^{27}$$
$$f''(x) = 336 \cdot (6x^2 - 18)^{27} + 108864x^2 \cdot (6x^2 - 18)^{26}$$

10) $f(x) = (17x + (-19))^{\sqrt{3}} + 20$

$$f'(x) = 17 \cdot \sqrt{3} \cdot (17x + (-19))^{\sqrt{3}-1}$$
$$f''(x) = 289 \cdot (3 - \sqrt{3}) \cdot (17x + (-19))^{\sqrt{3}-2}$$