Lösung A1

$f_1(x) = x^{-1}$	$f_1'(x) = -x^{-2}$
$f_2(x) = \frac{1}{x}$	$f_2'^{(x)} = -\frac{1}{x^2}$
$f_3(x) = \frac{2}{3x} + 2$	$f_3'(x) = -\frac{2}{3x^2}$
$f_4(x) = 2x^{-2} + 3x^{-1} + 2$	$f_4'(x) = -4x^{-3} - 3x^{-2}$
$f_5(x) = -\frac{1}{2}x^{-2} + 2x^{-1}$	$f_5'(x) = x^{-3}$
$f_6(t) = t^{\frac{1}{3}}$	$f_6'(t) = \frac{1}{3}t^{-\frac{2}{3}}$
$f_7(t) = t^{\frac{1}{4}}$	$f_7'(t) = \frac{1}{4}t^{-\frac{3}{4}}$

Lösung A2

$f_1(x) = \sqrt{x} - x = x^{\frac{1}{2}} - x$	$f_1'(x) = \frac{1}{2\sqrt{x}} - 1$
$f_2(x) = \frac{1}{\sqrt{x}} - x^2 = x^{-\frac{1}{2}} - x^2$	$f_2'^{(x)} = -\frac{1}{2\sqrt{x}} - 2x$
$f_3(x) = \sqrt{x^3} + 5 = x^{\frac{3}{2}} + 5$	$f_3'(x) = \frac{3}{2}\sqrt{x}$
$f_4(x) = \frac{1}{x+1} - 2x = (x+1)^{-1} - 2x$	$f_4'(x) = -\frac{1}{(x+1)^2} - 2$
$f_5(x) = \sqrt[3]{x^2} - \sqrt[4]{x^3} = x^{\frac{2}{3}} - x^{\frac{3}{4}}$	$f_5'(x) = \frac{2}{3\sqrt[3]{x}} - \frac{3}{4\sqrt[4]{x}}$
$f_6(t) = \frac{t}{2}x^4 - 2tx^3 + t^2$	$f_6'(t) = \frac{1}{2}x^4 - 2x^3 + 2t$
$f_7(t) = (t-1)\cdot(t-k)^2$	$f_7'(t) = 3t^2 - 4tk + k^2 - 2t + 2k$

Lösung A3

$f_1(x) = x^{3-t} + tx^2;\ \ t \in \mathbb{R}$	$f_1'(x) = (3-t)x^{2-t} + 2tx$
$f_2(x) = \frac{a}{4}x^2 + \frac{1}{a}x^3$	$f_2'^{(x)} = \frac{a}{2}x + \frac{3}{a}x^2$
$f_3(x) = \frac{1}{x^{\frac{1}{3}}} + \frac{1}{x^{\frac{1}{2}}} - x$	$f_3'(x) = -\frac{1}{3x^{\frac{4}{3}}} - \frac{1}{2x^{\frac{3}{2}}} - 1$
$f_4(x) = -\frac{1}{(x+1)^2} = -(x+1)^{-2}$	$f_4'(x) = \frac{2}{(x+1)^3}$
$f_5(x) = \frac{1}{x^{-0,5}} - \frac{2}{x^{-1}} = \sqrt{x} - 2x$	$f_5'(x) = \frac{1}{2^{0,5}} - 2$
$f_6(z) = \frac{a^2}{\sqrt{2z}} + \frac{b^2}{\sqrt[3]{2z^2}}$	$f_6'(t) = -\frac{a^2}{2\cdot\sqrt{2z^3}} - \frac{2b^2}{3\cdot\sqrt[3]{2z}}$
$f_7(tx) = f(x) = \frac{1}{4}(x-2) - \frac{1}{(x-2)^3}$	$f_7'(t) = \frac{1}{4} + \frac{3}{(x-2)^4}$

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