Lösung A1

$f_1(x) = 3 \cdot ln(x)$	$f_1'(x) = \frac{3}{x}$
$f_2(x) = \frac{1}{2} \cdot ln(x)$	$f_2'(x) = \frac{1}{2x}$
$f_3(x) = 3 \cdot ln(2x)$	$f_3'(x) = \frac{3}{x}$
$f_4(x) = ln(0{,}5x) \cdot 2$	$f_4'(x) = \frac{2}{x}$
$f_5(x) = a \cdot log_a(x)$	$f_5'(x) = \frac{a}{ln(a) \cdot x}$
$f_6(t) = \frac{1}{b} \cdot ln(t)$	$f_6'(t) = \frac{1}{b \cdot t}$
$f_7(t) = a^2 \cdot ln(\sqrt{2}t)$	$f_7'(t) = \frac{a^2}{t}$

Lösung A2

$f_1(x) = (4-x)(ln(3x) - 2)$	$f_1'(x) = -(ln(3x-2) + \frac{1}{x}(4-x) = -ln(3x) + \frac{4}{x} + 1$
$f_2(x) = (3-2x^2)\left(\frac{1}{2}ln(x) + 3x\right)$	$f_2'(x) = -4x\left(\frac{1}{2}ln(x) + 3x\right) + \left(\frac{1}{2x} + 3\right)(3-2x^2)$ $= -x(2\,ln(x) + 18x + 1) + \frac{3}{2x} + 9$
$f_3(x) = log_a(2x) - a$	$f_3'(x) = \frac{1}{ln(a) \cdot x}$
$f_4(x) = \frac{1}{ln(x)} \cdot (-4x^2 + 3)$	$f_4'(x) = -\frac{-4x^2+3}{ln^2(x) \cdot x} + \frac{-8x}{ln(x)} = -\frac{4x^2(2\,ln(x) - 1) + 3}{ln^2(x) \cdot x}$
$f_5(x) = 3ln(2x) \cdot (1 - ln(x))$	$f_5'(x) = \frac{3}{x}(1 - ln(x)) - \frac{3\,ln(2x)}{x} = -\frac{3(ln(2x) + ln(x) - 1)}{x}$
$f_6(t) = (t+1) \cdot (t-1) \cdot \frac{1}{ln(2t)}$	$f_6'(t) = \frac{2t}{ln(2t)} - \frac{t^2-1}{t \cdot ln^2(2t)} = \frac{t^2(2\,ln(2t) - 1) + 1}{t \cdot ln^2(2t)}$
$f_7(t) = ln(3t) + ln(2t) - ln(t)$	$f_7'(t) = \frac{1}{t} + \frac{1}{t} - \frac{1}{t} = \frac{1}{t}$

Lösung A3

$f_1(x) = ln(x) \cdot e^x$	$f_1'(x) = e^x\left(\frac{1}{x} + ln(x)\right)$
$f_2(x) = (2e^{ln(x)} + 1)(3ln(x^2) + 1)$	$\cancel{f_2'(x) = 12\,ln(x^2) + \frac{1}{x}}$ $f_2'(x) = \frac{12xln(x)+14x+6}{x}$
$f_3(x) = ln(4x+1) \cdot (sin(x) + 10)$	$\cancel{f_3'(x) = \frac{1}{4x} \cdot (sin(x) + 10) - ln(4x+1) \cdot cos(x)}$ $f_3'(x) = \frac{4(sin(x)+10)}{4x+1} + ln(4x+1) \cdot cos(x)$
$f_4(x) = 0{,}5 \cdot ln(x) \cdot (2e - 4e^2)$	$f_4'(x) = \frac{e-2e^2}{x}$
$f_5(x) = \frac{4}{ln(\sqrt{x})}$	$\cancel{f_5'(x) = \frac{-4ln(\sqrt{x})}{x}}$ $f_5'(x) = \frac{-8}{x \cdot ln^2(x)}$
$f_6(t) = (5x^3 - 2x) \cdot ln\left(\frac{1}{x}\right)$	$f_6'(t) = \frac{(15t^2-2) \cdot ln(t) - 5t^2 + 2}{ln^2(t)}$