

Aufgabe 1:

a) $f(x) = x^9$
 $f'(x) = 9x^8$

c) $f(x) = x^8$
 $f'(x) = 8x^7$

e) $f(x) = x^5$
 $f'(x) = 5x^4$

b) $f(x) = x^5$
 $f'(x) = 5x^4$

d) $f(x) = x^2$
 $f'(x) = 2x$

f) $f(x) = x$
 $f'(x) = 1$

Aufgabe 2:

a) $f(x) = -5x^2$
 $f'(x) = -10x$

c) $f(x) = 3x^{10}$
 $f'(x) = 30x^9$

e) $f(x) = -3x^4$
 $f'(x) = -12x^3$

b) $f(x) = 9x^7$
 $f'(x) = 63x^6$

d) $f(x) = -4x^5$
 $f'(x) = -20x^4$

f) $f(x) = 5x^2$
 $f'(x) = 10x$

Aufgabe 3:

a) $f(x) = -6,3x^4$
 $f'(x) = -25,2x^3$

c) $f(x) = -9,9x^3$
 $f'(x) = -29,7x^2$

e) $f(x) = 2,7x$
 $f'(x) = 2,7$

b) $f(x) = -2,6$
 $f'(x) = 0$

d) $f(x) = -8,9x^3$
 $f'(x) = -26,7x^2$

f) $f(x) = -4,6x^9$
 $f'(x) = -41,4x^8$

Aufgabe 4:

a) $f(x) = -9x^9 - x^3$
 $f'(x) = -81x^8 - 3x^2$

c) $f(x) = -9x^9 - 10x^4$
 $f'(x) = -81x^8 - 40x^3$

e) $f(x) = x^{10} + 5x^4$
 $f'(x) = 10x^9 + 20x^3$

b) $f(x) = 6x^9 - 8x^5$
 $f'(x) = 54x^8 - 40x^4$

d) $f(x) = 4x^{10} - 2x^7$
 $f'(x) = 40x^9 - 14x^6$

f) $f(x) = -6x^{10} - 7x^9$
 $f'(x) = -60x^9 - 63x^8$

Aufgabe 5:

a) $f(x) = 8x^4 + 18x^3$
 $f'(x) = 32x^3 + 54x^2$

c) $f(x) = 8x^9 + 7x^4 + 3x^3$
 $f'(x) = 72x^8 + 28x^3 + 9x^2$

e) $f(x) = 7x^7 + 8x^2$
 $f'(x) = 49x^6 + 16x$

b) $f(x) = 7x^7 + 10x^2 + 8$
 $f'(x) = 49x^6 + 20x$

d) $f(x) = 7x^5 + 8x^4 + 6x^2$
 $f'(x) = 35x^4 + 32x^3 + 12x$

f) $f(x) = x^{10} + 2x^5$
 $f'(x) = 10x^9 + 10x^4$