Aufgabe 1:

a) $f(x) = x^{15}$
$f'(x) = 15x^{14}$

b) $f(x) = x^{17}$
$f'(x) = 17x^{16}$

c) $f(x) = x^{9}$
$f'(x) = 9x^{8}$

Aufgabe 2:

a) $f(x) = 7.2x^{5}$
$f'(x) = 36.0x^{4}$

b) $f(x) = -3.1x^{8}$
$f'(x) = -24.8x^{7}$

c) $f(x) = 7.3x^{14}$
$f'(x) = 102.2x^{13}$

Aufgabe 3:

a) $f(x) = 5x^{15} - 15x^{4}$
$f'(x) = 75x^{14} - 60x^{3}$

b) $f(x) = -19x^{14}$
$f'(x) = -266x^{13}$

c) $f(x) = -17x^{9} + 2x^{8}$
$f'(x) = -153x^{8} + 16x^{7}$

Aufgabe 4:

a) $f(x) = -\frac{13}{x^{14}}$
$f'(x) = \frac{182}{x^{15}}$

b) $f(x) = -\frac{14}{x^{17}}$
$f'(x) = \frac{238}{x^{18}}$

c) $f(x) = -\frac{15}{x^{5}}$
$f'(x) = \frac{75}{x^{6}}$

Aufgabe 5:

a) $f(x) = 3\sqrt{\frac{1}{x^{5}}}$
$f'(x) = -15\sqrt{\frac{1}{x^{5}}}/2x$

b) $f(x) = -8\sqrt{x}$
$f'(x) = -4/\sqrt{x}$

c) $f(x) = 19\sqrt{\frac{1}{x^{4}}}$
$f'(x) = -38\sqrt{\frac{1}{x^{4}}}/x$

Aufgabe 6:

a) $2x + 1 = 5$
$\left[2\right]$

b) $4x + 5 = 0$
$\left[-\frac{5}{4}\right]$

c) $-3x - 1 = -2$
$\left[\frac{1}{3}\right]$

Aufgabe 7:

a) $-3x^{2} - 4x - 1 = 0$
$\left[-1, \ -\frac{1}{3}\right]$

b) $-4x^{2} + 2 = 0$
$\left[-\sqrt{2}/2, \ \sqrt{2}/2\right]$

c) $x^{2} + 4x + 3 = 0$
$\left[-3, \ -1\right]$