Aufgabe 1:

a) $\int_1^1 x\,dx=$
$[\frac{x^2}{2}]_1^1 = (\frac{1}{2}) - (\frac{1}{2}) = 0$

b) $\int_{-4}^{-2} x^6\,dx=$
$[\frac{x^7}{7}]_{-4}^{-2} = (-\frac{128}{7}) - (-\frac{16384}{7}) =$
2322.3

c) $\int_{-2}^{5} x^3\,dx=$
$[\frac{x^4}{4}]_{-2}^{5} = (\frac{625}{4}) - (4) = 152.25$

Aufgabe 2:

a) $\int_0^1 -4x^7\,dx=$
$[-\frac{x^8}{2}]_0^1 = (-\frac{1}{2}) - (0) = -0.5$

b) $\int_1^5 x^5\,dx=$
$[\frac{x^6}{6}]_1^5 = (\frac{15625}{6}) - (\frac{1}{6}) = 2604$

c) $\int_{-2}^{1} x^4\,dx=$
$[\frac{x^5}{5}]_{-2}^{1} = (\frac{1}{5}) - (-\frac{32}{5}) = 6.6$

Aufgabe 3:

a) $\int_{-1}^{5} 5x^2 + 2x\,dx=$
$[\frac{5x^3}{3} + x^2]_{-1}^{5} = (\frac{700}{3}) - (-\frac{2}{3}) =$
234

b) $\int_{-4}^{-1} -3x^4 - x^2\,dx=$
$[-\frac{3x^5}{5} - \frac{x^3}{3}]_{-4}^{-1} =$
$(\frac{14}{15}) - (\frac{9536}{15}) = -634.8$

c) $\int_4^4 -x^5 + 4x^3\,dx=$
$[-\frac{x^6}{6} + x^4]_4^4 =$
$(-\frac{1280}{3}) - (-\frac{1280}{3}) = 0$

Aufgabe 4:

a) $\int_1^5 x^2\,dx=$
$[\frac{x^3}{3}]_1^5 = (\frac{125}{3}) - (\frac{1}{3}) = 41.333$

b) $\int_{-1}^{3} -2x\,dx=$
$[-x^2]_{-1}^{3} = (-9) - (-1) = -8$

c) $\int_{-2}^{0} -4x^3 - 2x^2 + 3x\,dx=$
$[-x^4 - \frac{2x^3}{3} + \frac{3x^2}{2}]_{-2}^{0} =$
$(0) - (-\frac{14}{3}) = 4.6667$

Aufgabe 5:

a) $5x - 3 = 4$
$x = \frac{7}{5}$

b) $-3x + 1 = -4$
$x = \frac{5}{3}$

c) $3x = 2$
$x = \frac{2}{3}$

Aufgabe 6:

a) $-x^2 + 5x - 1 = 0$
$x_1 = 0.21,\ x_2 = 4.8$

b) $x^2 - 2x + 3 = 0$
Keine Lösung

c) $-2x^2 + 5x + 3 = 0$
$x_1 = -0.5,\ x_2 = 3.0$

Aufgabe 7:

a) $4x^2 + 2x + 5 = 0$
Keine Lösung

b) $3x^2 + 5x + 2 = 0$
$x_1 = -1.0,\ x_2 = -0.67$

c) $x^2 + x + 4 = 0$
Keine Lösung