$\Rightarrow y = 4 \quad , \; x = \frac{1}{6}(48 - 9 \cdot 4) = 2$

b)
$$\left(\begin{array}{cc|c} 3 & -2 & 4 \\ 6 & -4 & 8 \end{array}\right) \begin{array}{l} \\ \cdot 2 \end{array} \ominus \quad \left(\begin{array}{cc|c} 3 & -2 & 4 \\ 0 & 0 & 0 \end{array}\right)$$

$\Rightarrow y$ beliebig, $x = \frac{1}{3}(4 + 2y)$

c)
$$\left(\begin{array}{cc|c} 14 & -5 & 1 \\ 7 & -2{,}5 & 2 \end{array}\right) \begin{array}{l} \\ \cdot 2 \end{array} \ominus \quad \left(\begin{array}{cc|c} 14 & -5 & 1 \\ 0 & 0 & 3 \end{array}\right) \; y$$

keine Lsg.

d)
$$\left(\begin{array}{cc|c} 2 & 5 & 2 \\ 3 & -5 & 3 \end{array}\right) \begin{array}{l} \cdot 3 \\ \cdot 2 \end{array} \ominus \quad \left(\begin{array}{cc|c} 2 & 5 & 2 \\ 0 & -25 & 0 \end{array}\right)$$

$\Rightarrow y = 0, \; x = 1$

A26

$x \hat{=}$ Anzahl Menschen, $y \hat{=}$ Anzahl Hunde

Köpfe: $x + y = 35$

Beine: $2x + 4y = 94$

$$\left(\begin{array}{cc|c} 1 & 1 & 35 \\ 2 & 4 & 94 \end{array}\right) \begin{array}{l} \\ \cdot 2 \end{array} \ominus \quad \left(\begin{array}{cc|c} 1 & 1 & 35 \\ 0 & 2 & 24 \end{array}\right)$$

$\Rightarrow y = 12, \; x = 23$

A27

$x + y = 52$

$x - y = 26$

$$\left(\begin{array}{cc|c} 1 & 1 & 52 \\ 1 & -1 & 26 \end{array}\right) \ominus \quad \left(\begin{array}{cc|c} 1 & 1 & 52 \\ 0 & -2 & -26 \end{array}\right)$$

$\Rightarrow y = 13 \quad , \; x = 39$

A28

$x + (x+1) + (x+2) = 504 \Leftrightarrow 3x = 501 \Leftrightarrow x = 167$

$\Rightarrow$ Es sind die Zahlen 167, 168, 169

A31

a) $f'(x) = 1$

b) $f'(x) = 12x^5 + 15x^4$

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

d) $f'(x) = a\,(n+1)\,x^n$

e) $f'(x) = -\frac{1}{x^2} + 1$

f) $f'(x) = \frac{-6}{x^3}$

g) $f'(x) = \frac{1}{3}x^{-2/3} - \frac{1}{2}x^{-1/2}$

h) $f'(x) = \ln 3 \cdot (3^x)$

A32

a) $f(x) = (2x^2 - 1)(x^4 - 1) = 2x^6 - x^4 - 2x^2 + 1$

$f'(x) = 12x^5 - 4x^3 - 4x$

b) $f(x) = e^x (x^5 + 0{,}5) + e^x \cdot 5x^4 = e^x (x^5 + 5x^4 + 0{,}5)$

c) $f'(x) = \ln x + x \cdot \frac{1}{x} = \ln x + 1$

d) $f(x) = \frac{x+1}{x-1} = 1 + \frac{2}{x-1}$

$f'(x) = \frac{-2}{(x-1)^2}$

e) $f(x) = \frac{2x}{x^3+1}$

$f'(x) = \frac{2(x^3+1) - 2x \cdot 3x^2}{(x^3+1)^2} = \frac{2 - 4x^3}{(x^3+1)^2}$

f) $f'(x) = 60\,(x^2+1)^{59} \cdot 2x = 120x\,(x^2+1)^{59}$

A33

a) $f'(x) = e^{x^2} \cdot 2x$

a) $f'(x) = e^{x^2} \cdot 2x$

b) $f'(x) = \frac{1}{x^3 - 2x} \cdot (3x^2 - 2)$

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

d) $f(x) = \ln \sqrt{x} = \frac{1}{2} \ln x$

$f'(x) = \frac{1}{2x}$

e) $f(x) = \ln \sqrt{c^2 + x^2} = \frac{1}{2} \ln (c^2 + x^2)$

$f'(x) = \frac{1}{2(c^2+x^2)} \cdot 2x = \frac{x}{c^2 + x^2}$

f) $f'(x) = 3e^{\sqrt{x}} \cdot \frac{1}{2\sqrt{x}}$

g) $f'(x) = \frac{1}{x} e^{3x} + \ln x \, e^{3x} \cdot 3 = e^{3x} \left(\frac{1}{x} + 3 \ln x \right)$