Lösungen zum Aufgabenblatt für den 2.03.2005

1. a) i) $T(7\,;\,5) = 5 \cdot 7 - (3 \cdot 5 + 2 \cdot 7) = 35 - (15 + 14) = 35 - 29 = 6$

   ii) $T(7\,;\,5) = 5 \cdot 7 - (3 \cdot 5 + 2 \cdot 7) = 5 \cdot 7 - 3 \cdot 5 - 2 \cdot 7 = 35 - 15 - 14 = 6$

   b) i) $T(3\,;\,-6) = 5 \cdot 3 - (3 \cdot (-6) + 2 \cdot 3) = 15 - (-18 + 6) = 15 - (-12) = 15 + 12 = 27$

   ii) $T(3\,;\,-6) = 5 \cdot 3 - (3 \cdot (-6) + 2 \cdot 3) = 5 \cdot 3 - 3 \cdot (-6) - 2 \cdot 3 = 15 + 18 - 6 = 27$

   c) $T(x\,;\,y) = 5x - (3y + 2x) = 5x - 3y - 2x = 5x - 2x - 3y = 3x - 3y$

   $\Rightarrow$ $T(7\,;\,5) = 3 \cdot 7 - 3 \cdot 5 = 21 - 15 = 6$
   $T(3\,;\,-6) = 3 \cdot 3 - 3 \cdot (-6) = 9 + 18 = 27$

2. a) $7a + (4b - 3a) = 7a + 4b - 3a = 7a - 3a + 4b = 4a + 4b$

   b) $9x - (11y^2 + 8z^3) = 9x - 11y^2 - 8z^3$

   c) $5k - (21m - k) + 31m - 4k^2m = 5k - 21m + k + 31m - 4k^2m = 6k + 10m - 4k^2m$

   d) $2a^4b - (3b - 7c^2 + a^4b - 5b^2d) - 6b = 2a^4b - 3b + 7c^2 - a^4b + 5b^2d - 6b$
   $= a^4b - 9b + 7c^2 + 5b^2d$

   e) $-(4{,}1x^2 - \frac{2}{5}y^2 + \frac{3}{10}z^2) - \frac{3}{10}y^2 - (0{,}7z^2 - 2\frac{1}{2}x^2) + 4x - \frac{2}{5}x^2 + (4 - \frac{1}{10}x^2 + x)$

   $= -4{,}1x^2 + \frac{2}{5}y^2 - \frac{3}{10}z^2 - \frac{3}{10}y^2 - 0{,}7z^2 + 2\frac{1}{2}x^2 + 4x - \frac{2}{5}x^2 + 4 - \frac{1}{10}x^2 + x$

   $= 4x + x - 4{,}1x^2 + 2\frac{1}{2}x^2 - \frac{2}{5}x^2 - \frac{1}{10}x^2 + \frac{2}{5}y^2 - \frac{3}{10}y^2 - \frac{3}{10}z^2 - 0{,}7z^2 + 4$

   $= 5x - 4{,}1x^2 + 2{,}5x^2 - 0{,}4x^2 - 0{,}1x^2 + 0{,}4y^2 - 0{,}3y^2 - 0{,}3z^2 - 0{,}7z^2 + 4$

   $= 5x - 2{,}1x^2 + 0{,}1y^2 - z^2 + 4$