

**Lösungen Training ganzrationale Funktionen III****Ergebnisse:**

1.	$(x^3 + 2x^2 - 5x - 6) : (x + 1) = x^2 + x - 6$
2.	$(2x^3 - 14x - 12) : (x - 3) = 2x^2 + 6x + 4$
3.	$(3x^3 - 15x^2 - 51x + 63) : (x - 7) = 3x^2 + 6x - 9$
4.	$\left(\frac{1}{2}x^3 - \frac{3}{2}x^2 - 2x + 6\right) : (x + 2) = \frac{1}{2}x^2 - \frac{5}{2}x + 3$
5.	$\left(x^3 + \frac{11}{2}x^2 + 5x - 4\right) : (x + 2) = x^2 + \frac{7}{2}x - 2$
6.	$\left(x^3 + \frac{3}{2}x^2 - \frac{11}{2}x - 3\right) : (x - 2) = x^2 + \frac{7}{2}x + \frac{3}{2}$
7.	$\left(x^3 - \frac{5}{4}x^2 - \frac{23}{4}x + \frac{3}{2}\right) : (x - 3) = x^2 + \frac{7}{4}x - \frac{1}{2}$
8.	$\left(x^3 - \frac{5}{3}x^2 - \frac{47}{3}x - 5\right) : (x + 3) = x^2 - \frac{14}{3}x - \frac{5}{3}$
9.	$\left(x^3 + \frac{3}{2}x^2 - \frac{11}{2}x - 3\right) : (x + 3) = x^2 - \frac{3}{2}x - 1$
10.	$(3x^3 - 15x^2 - 51x + 63) : (x - 1) = 3x^2 - 12x - 63$

**Ausführliche Lösungen:**

$$\begin{array}{r}
 1. \quad (x^3 + 2x^2 - 5x - 6) : (x + 1) = x^2 + x - 6 \\
 \underline{-(x^3 + x^2)} \\
 \quad x^2 - 5x \\
 \quad \underline{-(x^2 + x)} \\
 \quad \quad -6x - 6 \\
 \quad \quad \underline{-(-6x - 6)}
 \end{array}$$

$$\begin{array}{r}
 2. \quad (2x^3 - 14x - 12) : (x - 3) = 2x^2 + 6x + 4 \\
 \underline{-(2x^3 - 6x^2)} \\
 \quad 6x^2 - 14x \\
 \quad \underline{-(6x^2 - 18x)} \\
 \quad \quad 4x - 12 \\
 \quad \quad \underline{-(4x - 12)}
 \end{array}$$

$$\begin{array}{r}
 3. \quad (3x^3 - 15x^2 - 51x + 63) : (x - 7) = 3x^2 + 6x - 9 \\
 \underline{-(3x^3 - 21x^2)} \\
 \quad 6x^2 - 51x \\
 \quad \underline{-(6x^2 - 42x)} \\
 \quad \quad -9x + 63 \\
 \quad \quad \underline{-(-9x + 63)}
 \end{array}$$

$$\begin{array}{r}
 4. \quad \left(\frac{1}{2}x^3 - \frac{3}{2}x^2 - 2x + 6\right) : (x + 2) = \frac{1}{2}x^2 - \frac{5}{2}x + 3 \\
 \underline{-(\frac{1}{2}x^3 + x^2)} \\
 \quad -\frac{5}{2}x^2 - 2x \\
 \quad \underline{-\left(-\frac{5}{2}x^2 - 5x\right)} \\
 \quad \quad 3x + 6 \\
 \quad \quad \underline{-(3x + 6)}
 \end{array}$$

$$\begin{array}{r}
 5. \quad \left(x^3 + \frac{11}{2}x^2 + 5x - 4\right) : (x+2) = x^2 + \frac{7}{2}x - 2 \\
 \underline{-(x^3 + 2x^2)} \\
 \quad \frac{7}{2}x^2 + 5x \\
 \quad \underline{-(\frac{7}{2}x^2 + 7x)} \\
 \quad \quad -2x - 4 \\
 \quad \quad \underline{-(-2x - 4)}
 \end{array}$$

$$\begin{array}{r}
 6. \quad \left(x^3 + \frac{3}{2}x^2 - \frac{11}{2}x - 3\right) : (x-2) = x^2 + \frac{7}{2}x + \frac{3}{2} \\
 \underline{-(x^3 - 2x^2)} \\
 \quad \frac{7}{2}x^2 - \frac{11}{2}x - 3 \\
 \quad \underline{-(\frac{7}{2}x^2 - \frac{14}{2}x)} \\
 \quad \quad \frac{3}{2}x - 3 \\
 \quad \quad \underline{-(\frac{3}{2}x - 3)}
 \end{array}$$

$$\begin{array}{r}
 7. \quad \left(x^3 - \frac{5}{4}x^2 - \frac{23}{4}x + \frac{3}{2}\right) : (x-3) = x^2 + \frac{7}{4}x - \frac{1}{2} \\
 \underline{-(x^3 - 3x^2)} \\
 \quad \frac{7}{4}x^2 - \frac{23}{4}x + \frac{3}{2} \\
 \quad \underline{-(\frac{7}{4}x^2 - \frac{21}{4}x)} \\
 \quad \quad -\frac{1}{2}x + \frac{3}{2} \\
 \quad \quad \underline{-(-\frac{1}{2}x + \frac{3}{2})}
 \end{array}$$

$$\begin{array}{r}
 8. \quad \left(x^3 - \frac{5}{3}x^2 - \frac{47}{3}x + -5\right) : (x+3) = x^2 - \frac{14}{3}x - \frac{5}{3} \\
 \underline{-(x^3 + 3x^2)} \\
 \quad -\frac{14}{3}x^2 - \frac{47}{3}x \\
 \quad \underline{-\left(-\frac{14}{3}x^2 - \frac{42}{3}x\right)} \\
 \qquad -\frac{5}{3}x - 5 \\
 \qquad \underline{-\left(-\frac{5}{3}x - 5\right)}
 \end{array}$$

$$\begin{array}{r}
 9. \quad \left(x^3 + \frac{3}{2}x^2 - \frac{11}{2}x - 3\right) : (x+3) = x^2 - \frac{3}{2}x - 1 \\
 \underline{-(x^3 + 3x^2)} \\
 \quad -\frac{3}{2}x^2 - \frac{11}{2}x \\
 \quad \underline{-\left(-\frac{3}{2}x^2 - \frac{9}{2}x\right)} \\
 \qquad -x - 3 \\
 \qquad \underline{-(-x - 3)}
 \end{array}$$

$$\begin{array}{r}
 10. \quad (3x^3 - 15x^2 - 51x + 63) : (x-1) = 3x^2 - 12x - 63 \\
 \underline{-(3x^3 - 3x^2)} \\
 \quad -12x^2 - 51x \\
 \quad \underline{-(-12x^2 + 12x)} \\
 \qquad -63x + 63 \\
 \qquad \underline{-(-63x + 63)}
 \end{array}$$