

2.2 Bestimmen des allgemeinen Funktionsterm

1.) $f(x) = ax^3 + bx^2 + cx + d$

2) $P(0|3), Q(-1|5), R(-2|-1), S(1|M)$

$$3 = a \cdot 0 + b \cdot 0 + c \cdot 0 + d \Rightarrow d = 3$$

I $5 = a(-1)^3 + b(-1)^2 + c(-1) + 3$

II $-1 = a(-2)^3 + b(-2)^2 + c(-2) + 3$

III $M = a \cdot 1^3 + b \cdot 1^2 + c \cdot 1 + 3$

$$\begin{array}{rcl} 2 & = & -a + b - c \\ -4 & = & -8a + 4b - 2c \\ 8 & = & a + b + c \end{array} \quad +$$

$$10 = 2b$$

$$5 = b$$

$$\begin{array}{rcl} 2 & = & -a + 5 - c \\ -4 & = & -8a + 20 - 2c \end{array} \quad \begin{array}{l} | \cdot 2 \\ - \end{array}$$

$$8 = 6a + 10$$

$$-2 = 6a$$

$$-\frac{1}{3} = a$$

$$8 = -\frac{1}{3} + 5 + c$$

$$\frac{10}{3} = c$$

$$f(x) = -\frac{1}{3}x^3 + 5x^2 + \frac{10}{3}x + 3$$