

$$(1) f(x) = -(x+4)^2 + 9$$

$$g(x) = -(-(x+4)^2 + 9)$$

$$g(x) = (x+4)^2 - 9 = x^2 + 8x + 7 = (x+7)(x+1)$$

$$g(x) : \cdot T(-4, -9)$$

$$\cdot x_1 = -7, x_2 = -1$$

$$\cdot A(0, 7)$$

• V

$$[g \circ f(x)], [g \circ |g(x)|]$$

$$(5) f(x) = (x-3)^2 + (x+5)^2 + 3(x-2)^2$$

$$f(x) = x^2 - 6x + 9 + x^2 + 10x + 25 + 3x^2 - 12x + 12$$

$$f(x) = 3x^2 - 8x + 46$$

$$p = -\frac{b}{2a} = \frac{8}{10} = \frac{4}{5}$$

$$x \text{ muss biti } \underline{\underline{4/5}}$$

$$(2) f(x) = x^2 + (m-1)x + m + 2$$

$$D = \emptyset$$

$$(m-1)^2 - 4(m+2) = 0$$

$$m^2 - 2m + 1 - 4m - 8 = 0$$

$$m^2 - 6m - 7 = 0$$

$$(m-7)(m+1) = 0$$

$$\underline{\underline{m=7}}, \underline{\underline{m=-1}}$$

$$(3) f(x) = ax^2 + bx + c$$

$$M(-1, 5), N(2, 16), P(0, -2)$$

$$M: 5 = a(-1)^2 + b(-1) + c$$

$$N: 16 = a(2)^2 + b \cdot 2 + c$$

$$P: -2 = c \Rightarrow c = -2$$

$$a - b + c = 5 \Rightarrow a - b = 7 \quad | \cdot 2$$

$$4a + 2b + c = 16 \Rightarrow \frac{4a + 2b = 18}{2a - 2b = 14} \quad \left. \vphantom{\frac{4a + 2b = 18}{2a - 2b = 14}} \right\} +$$

$$6a = 32$$

$$a = \frac{16}{3} \Rightarrow b = a - 7 = \frac{16}{3} - \frac{21}{3} =$$

$$b = -\frac{5}{3}$$

$$\rightarrow f(x) = \underline{\underline{\frac{16}{3}x^2 - \frac{5}{3}x - 2}}$$

(4.b)

$$\frac{5^{x+3} + 5^{x+2} + 2 \cdot 5^{x+1}}{5^{x+2} - 5^{x+1}} =$$

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

$$= \frac{32}{4} = 8$$

(4a)

$$\frac{6\sqrt{3} - 3\sqrt{6}}{\sqrt{6} - \sqrt{3}} + \frac{6\sqrt{6}}{\sqrt{6} + \sqrt{3}} + 3\sqrt{18} =$$

$$= \frac{(6\sqrt{3} - 3\sqrt{6})(\sqrt{6} + \sqrt{3}) + 6\sqrt{6}(\sqrt{6} - \sqrt{3})}{(\sqrt{6} - \sqrt{3})(\sqrt{6} + \sqrt{3})} + 3\sqrt{18} =$$

$$= \frac{6\sqrt{18} - 18 - 3\sqrt{18} + 18 + 36 - 6\sqrt{18}}{6 - 3} + 3\sqrt{18} =$$

$$= \frac{36 - 3\sqrt{18}}{3} + 3\sqrt{18} = 12 + 2\sqrt{18}$$

(6*) gleich 0 list