

$$2) \log_7(4x-6) - \log_7(2x-4) = 0$$

$$\log_7\left(\frac{4x-6}{2x-4}\right) = 0$$

$$4x-6 = 2x-4$$

$$x=1, \text{ NO } 4x-6 = 4 \cdot 1 - 6 = -2 < 0$$

Order: kein Gegenstand

$$3) \log_{\frac{1}{2}} x - \log_{\frac{1}{2}} x = 6 \quad \log_{\frac{1}{2}} x = 6$$

$$4^2 - 4 - 6 = 0$$

$$D = 1 + 24 = 25 = 5^2$$

$$y_1 = \frac{1+5}{2} = 3 \quad y_2 = \frac{1-5}{2} = -2$$

$$\log_{\frac{1}{2}} x = 3$$

$$\log_{\frac{1}{2}} x = -2$$

$$x_1 = \frac{1}{8}$$

$$x_2 = 4$$

$$\text{Order: } \frac{1}{8}, 4$$

$$4) \frac{x^2 + 2x - 5}{x-1} = x+2$$

$$x^2 + 2x - 5 = x^2 + x - 2$$

$$x = 3$$

Order: 3

$$5) 2x+1 = \sqrt{1-3x}$$

$$4x^2 + 4x + 1 = 1 - 3x$$

$$4x^2 + 7x = 0$$

$$x_1 = 0$$

$$4x + 7 = 0$$

$$x_2 = -\frac{7}{4}, \text{ NO } 2x+1 = 2 \cdot \left(-\frac{7}{4}\right) + 1 = -\frac{5}{2} < 0$$

Order: 0

$$6) 3^x + x - 17 = \frac{30^x}{10^x}$$

$$x - 17 = 0$$

$$x = 17$$

Order: 17

$$7) \log_2 x + 4 \log_2 x = 5$$

$$\log_2 x = 1$$

$$x = 2^1 = 2$$

$$8) \log_3 x + 2 \log_3 x + \log_3 x = 6$$

$$\log_3 x + 1 = 3$$

$$x = 3^2 = 9$$

Order: 9