Di., 15.12.2020

S. 85/7 a) $f(x) = 2x^2 - 8x + 6$

$2x^2 - 8x + 6 = 0$

$2 \cdot (x^2 - 4x + \ldots - \ldots) + 6 = 0$

$a^2 - 2ab + b^2$

$a \hat{=} x$

$2ab \hat{=} 4x \Big\} \; 2b = 4$

$b = 2$

$2(x^2 - 4x + 2^2 - 2^2) + 6 = 0$

$2((x-2)^2 - 4) + 6 = 0$

$2(x-2)^2 - 8 + 6 = 0$

$2(x-2)^2 - 2 = 0$

$2(x-2)^2 = 2$

$(x-2)^2 = 1$

$|x-2| = \sqrt{1}$

$x - 2 = +1$ oder $x - 2 = -1$

$x_1 = 3$ $\qquad$ $x_2 = 1$

7c) $f(x) = 5x^2 - 3x$

$5x \cdot 2 - 3x = 0$

$x(5x - 3) = 0$

$\Rightarrow x = 0$ oder $5x - 3 = 0$

$5x = 3$

$x = \frac{3}{5}$

$x_1 = 0$ oder $x_2 = \frac{3}{5}$

mit quadratischer Ergänzung:

$$5x^2 - 3x = 0$$

$$5\left(x^2 - \frac{3}{5}x\right) = 0 \quad |:5$$

$$x^2 - \frac{3}{5}x + \ldots - \ldots = 0$$

$$a^2 - 2ab + b^2$$

$$\left.\begin{array}{l} a \hat{=} x \\ 2ab \hat{=} \frac{3}{5}x \end{array}\right\} \; 2b = \frac{3}{5}$$

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

$$\underbrace{x^2 - \frac{3}{5}x + \left(\frac{3}{10}\right)^2} - \left(\frac{3}{10}\right)^2 = 0$$

$$\left(x - \frac{3}{10}\right)^2 - \frac{9}{100} = 0$$

$$\left(x - \frac{3}{10}\right)^2 = \frac{9}{100} \quad |\sqrt{\;}$$

$$\left|x - \frac{3}{10}\right| = \frac{3}{10}$$

$$x - \frac{3}{10} = +\frac{3}{10} \quad \text{oder} \quad x - \frac{3}{10} = -\frac{3}{10}$$

$$x_1 = \frac{3}{5} \qquad x_2 = 0$$

7d) $t^2 - 8t + 2 = 0$

$$t^2 - 8t + \ldots - \ldots + 2 = 0$$

$$a^2 - 2ab + b^2$$

$$\left.\begin{array}{l} a \hat{=} t \\ 2ab = 8t \end{array}\right\} \; 2b = 8$$

$$b = 4$$

$$\underbrace{t^2 - 8t + 4^2} - 4^2 + 2 = 0$$

$$(t-4)^2 - 16 + 2 = 0$$

$$(t-4)^2 = 14$$

$$|t-4| = \sqrt{14}$$

$$t-4 = \sqrt{14} \quad \text{oder} \quad t-4 = -\sqrt{14}$$

$$t_1 = 4 + \sqrt{14} \qquad t_2 = 4 - \sqrt{14}$$