① a) $(x+2)^3 = 27$ $\quad \underline{L = \{1\}}$

„Im Kopf: „Die Klammer muss 3 ergeben"

b) $(8-x)^4 = 16$ $\quad \underline{L = \{6; 10\}}$

„Die Klammer muss ± 2 ergeben"

c) $\sqrt{67-x} = 8$ $\quad \underline{L = \{3\}}$

„Unter der Wurzel muss 64 stehen"

d) $\frac{2}{14} = \frac{1}{x+4}$ $\quad \underline{L = \{3\}}$

„Der Nenner muss 7 ergeben"

e) $x^2 - x = 0$ $\quad \underline{L = \{0; 1\}}$

„Ausklammern: $x(x-1)$"

f) $2x^3 = 4x^2$ $\quad L = \{0; 2\}$

„Ausklammern: $x^2(2x-4)$"

② a) $x^2 - 5x + 6 = 0$ $\quad L = \{2; 3\}$

$-$ ↑ ↑ $2 \cdot 3$

$2+3$

b) $x^2 - 8x - 20 = 0$ $\quad \underline{L = \{-2; 10\}}$

c) $x^2 - 11x + 24 = 0$ $\quad \underline{L = \{3; 8\}}$

d) $x^2 + \frac{7}{2}x + \frac{3}{2} = 0$ $\quad \underline{L = \{-3; -\frac{1}{2}\}}$

e) $x^2 + \frac{5}{3}x - \frac{2}{3} = 0$ $\quad \underline{L = \{-2; \frac{1}{3}\}}$

f) $x^2 - 3\sqrt{2}x + 4 = 0$ $\quad L = \{2\sqrt{2}; \sqrt{2}\}$

③ a) $x^2(4x+1) + 5 = 5(x-1) + 2(x+2x^3)$

$4x^3 + x^2 + 5 = 5x - 5 + 2x + 4x^3 \quad | -4x^3 - 7x + 5$

$x^2 - 7x + 10 = 0$

Viela: $\underline{L = \{2; 5\}}$

③ b) $5x^4 + x^5 + 4x^3 = -3x(x^3 + x^2)$

$5x^4 + x^5 + 4x^3 = -3x^4 - 3x^3 \quad | +3x^4 + 3x^3$

$x^5 + 8x^4 + 7x^3 = 0$

$x^3(x^2 + 8x + 7) = 0$

$x_1 = 0$ oder $(x^2 + 8x + 7) = 0$

Vieta: $L_2 = \{-1; -7\}$

$\underline{L = \{0; -1; -7\}}$

c) $3x^4 - 87x^2 + 300 = 0 \quad | : 3$

$x^4 - 29x^2 + 100 = 0$

Substitution: $u = x^2$

$u^2 - 29u + 100 = 0$

Vieta: $u_1 = 25, \quad u_2 = 4$

Rücksubstitution: $x^2 = 25 \Rightarrow x_{1/2} = \pm 5$

$x^2 = 4 \Rightarrow x_{3/4} = \pm 2$

$\underline{L = \{\pm 2; \pm 5\}}$