Nr. 4) $F(x) = ax^3 + bx^2 + cx + d$

a) $A(0|1) \Rightarrow F(0) = \underline{\underline{d = 1}}$

$B(1|0) \Rightarrow F(1) = a + b + c + 1 = 0$

$C(-1|4) \Rightarrow F(-1) = -a + b - c + 1 = 4$

$D(2|-5) \Rightarrow F(2) = 8a + 4b + 2c + 1 = -5$

$$\begin{array}{rcl|l|l} a + b + c & = & -1 & \cdot 1 & \cdot 8 \\ -a + b - c & = & 3 & \cdot 1 & \\ 8a + 4b + 2c & = & -6 & & \cdot(-1) \end{array}$$

$$a + b + c = -1$$

$$2b = 2 \Rightarrow \underline{\underline{b = 1}}$$

$$4b + 6c = -2 \Rightarrow 6c = -2 - 4 \cdot 1 = -6 \Rightarrow \underline{\underline{c = -1}}$$

$$a + 1 - 1 = -1 \Rightarrow \underline{\underline{a = -1}}$$

$$\underline{\underline{F(x) = -1 \cdot x^3 + 1 \cdot x^2 - 1 \cdot x + 1}}$$

S 168 Nr. 4b) $f(x) = ax^3 + bx^2 + cx + d$

$A(0|0) \Rightarrow f(0) = \quad \underline{\underline{d = 0}}$

$B(1|-6) \Rightarrow f(1) = a + b + c + 0 = -6 \quad | \cdot 1 \quad | \cdot 27$

$C(-1|6) \Rightarrow f(-1) = -a + b - c + 0 = 6 \quad | \cdot 1$

$D(3|6) \Rightarrow \underline{f(3) = 27a + 9b + 3c + 0 = 6} \quad | \cdot (-1)$

$a + b + c = -6$

$2b = 0 \Rightarrow \underline{\underline{b = 0}}$

$18b + 24c = -168 \Rightarrow 18 \cdot 0 + 24c = -168 \quad | :24$

$\underline{\underline{c = -7}}$

$a + 0 + (-7) + 0 = -6 \Rightarrow \underline{\underline{a = 1}}$

$\underline{\underline{f(x) = 1 \cdot x^3 - 7x}}$

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

$A(0|-1) \Rightarrow f(0) = \quad \underline{\underline{d = -1}}$

$B(1|1) \Rightarrow f(1) = a + b + c - 1 = 1$

$C(-1|7) \Rightarrow f(-1) = -a + b - c - 1 = 7$

$D(2|17) \Rightarrow f(2) = \underline{8a + 4b + 2c - 1 = 17}$

$a + b + c = 2 \quad | \cdot 1 \quad | \cdot 8$

$-a + b - c = 8 \quad | \cdot 1$

$\underline{8a + 4b + 2c = 18} \quad | \cdot (-1)$

$a + b + c = 2$

$2b = 10 \Rightarrow \underline{\underline{b = 5}}$

$\underline{4b + 6c = -2} \Rightarrow 4 \cdot 5 + 6c = -2$

$6c = -22 \Rightarrow \underline{\underline{c = -\frac{22}{6} = -\frac{11}{3}}}$

$a + 5 - \frac{11}{3} = 2 \Rightarrow a = 2 - 5 + \frac{11}{3} = -\frac{9}{3} + \frac{11}{3} = \underline{\underline{\frac{2}{3}}}$

$\underline{\underline{f(x) = \frac{2}{3}x^3 + 5x^2 - \frac{11}{3}x - 1}}$