Lösung Langzeit (1)

P1) (2)

$$f'(x) = 6\cdot e^{-3x+1} + (6x+2)\cdot(-3)\,e^{-3x+1} \quad 1$$

$$= -18x\cdot e^{-3x+1} \quad 1$$

P2) (3)

$$F(x) = 2\cdot e^{\frac{1}{2}x-1} \quad 1$$

$$F(2) = 2\cdot e^{0} = 2$$

$$F(4) = 2\cdot e^{1} = 2e \quad 1$$

$$\int_2^4 f(x)\,d(x) = 2e-2 \quad 1$$

P3) (3)

$$x_1 = \frac{\ln 1}{2} = 0 \quad 1$$

$$x_2 = \ln 2 \quad 1 \qquad L = [\,0;\ \ln 2\,]$$

$$e^{x} \neq -2 \quad 1$$

P4) (4)

$$f(x) = 10\cdot e^{-\frac{1}{2}x+1}$$

$$f(2) = 10\cdot e^{0} = 10$$

$$f'(x) = -5\cdot e^{-\frac{1}{2}x+1}$$

$$f'(2) = -5$$

$$y = mx + c$$

$$10 = -5\cdot 2 + c$$

$$c = 20$$

$$y = -5x + 20 \quad 2$$

$$S_x:\ y = 0 \qquad S_x(4/0) \qquad g = 4$$

$$S_y:\ x = 0 \qquad S_y(0/20) \qquad h = 20$$

$$A = \frac{1}{2}\cdot 4\cdot 20 = \underline{40\ FE} \quad 2$$

P5) (5)

$D_4 = \mathbb{R}\setminus\{0\}$ → $f_4(x) \Leftrightarrow B3$

$f_2(0) = e$ → $f_2(x) \Leftrightarrow B4$

$\lim\limits_{x\to\infty} f_1(x) = \infty$ → $f_1(x) \Leftrightarrow B1$

$\lim f_3(x) = -\infty$ → $f_3(x) \to B2$

Zuordnung 3P

Begründung 2P