Nr. 4) a) $f(x) = 3x^2$ $\quad F(x) = 3 \cdot \frac{x^3}{3} = x^3$

$$\int_1^3 (3x^2)\,dx = \left[x^3\right]_1^3 = 3^3 - 1^3 = 26$$

b) $f(x) = 2x$ $\quad F(x) = 2 \cdot \frac{x^2}{2} = x^2$

$$\int_0^4 (2x)\,dx = \left[x^2\right]_0^4 = 4^2 - 0^2 = 16$$

c) $f(x) = x^2$ $\quad F(x) = \frac{x^3}{3}$

$$\int_2^4 (x^2)\,dx = \left[\frac{x^3}{3}\right]_2^4 = \frac{4^3}{3} - \frac{2^3}{3} = \frac{64}{3} - \frac{8}{3} = \frac{56}{3}$$

d) $f(x) = 3$ $\quad F(x) = 3x$

$$\int_{100}^{150} 3\,dx = \left[3x\right]_{100}^{150} = 3 \cdot 150 - 3 \cdot 100 = 150$$

Nr. 5)
$$\int_{-2}^{-1} (-2x)\,dx = \left[-x^2\right]_{-2}^{-1} = -(-1)^2 - \{-(-2)^2\}$$

$$= -1 + 4 = 3 \Rightarrow \text{(II) ist richtig}$$

Nr. 6) A → 4

B → 2

C → 1

D → 3

O. Fell