

Examen

$$1. \int_{-2}^2 x^2 dx \quad \left| \frac{x^3}{3} = \frac{2^3}{3} = \frac{-2^3}{3} \right.$$
$$= \frac{8}{3} - \frac{-8}{3} = \frac{0}{3} = 0$$

$$2. \int_{-3}^3 (2x^2 + 3) dx$$
$$= \left| \frac{2x^3}{3} + 3x \right|_{-3}^3$$
$$= \frac{2 \cdot 3^3}{3} + \frac{2 \cdot (-3)^3}{3} = 54 - \frac{108}{3} = 36$$
$$= 3 \cdot 3 - 3 \cdot -3$$
$$= 18$$
$$= 36 + 18 = 54$$

$$3. \int_{-3}^3 x^4 (x^2 - x) dx$$
$$= \int_{-3}^3 x^2 \int_{-3}^3 x^3 - \int_{-3}^3 3x$$
$$= \int_{-3}^3 \frac{x^5}{5} - \left| \frac{3^5}{5} - \frac{(-3)^5}{5} = \frac{243}{5} - \frac{-243}{5} \right.$$
$$= \frac{486}{5} = 97.2$$
$$= \int_{-3}^3 \frac{x^4}{4} \Big|_{-3}^3 = \frac{3^4}{4} - \frac{81}{4}$$
$$= \frac{81 - 81}{4} = 0$$

$$5. \int_8^{12} 6(x) dx$$

$$\int_8^{12} (x+8) dx$$

$$\frac{x^2}{2} + 8x \Big|_8^{12}$$

$$\left(\frac{12^2}{2} + 8(12) \right) - \left(\frac{8^2}{2} + 8(8) \right)$$

$$168 - 96$$

$$\int_8^{12} 6(x) dx = 72$$