

Aufgabe 1

$$a) \int_{-2}^2 (7x^3 - 5x)^2 dx = \int_{-2}^2 (49x^6 - 70x^4 + 25x^2) dx$$

$$= \int_{-2}^2 (49x^7 - 70x^5 + 25x^3) dx$$

$$b) \int_a^9 \frac{1}{x^2} dx = \frac{8}{9}; \quad \int_a^9 x^{-2} dx = \frac{8}{9}; \quad \left[-x^{-1} \right]_a^9 = \frac{8}{9}$$

$$\left[-\frac{1}{x} \right]_a^9 = \frac{8}{9}; \quad -\frac{1}{9} + \frac{1}{a} = \frac{8}{9}; \quad \frac{1}{a} = 1 \Rightarrow a = 1$$

Aufgabe 2

$$a) f(x) = 6 + 8x + 2x^2$$

$$F(x) = \frac{2}{3}x^3 + 4x^2 + 6x + C$$

$$F(-3) = -\frac{2}{3} \cdot 27 + 4 \cdot 9 - 18 + C = 0$$

$$-18 + 36 - 18 + C = 0$$

C

= 0

$$F(x) = \frac{2}{3}x^3 + 4x^2 + 6x$$

$$b) x \left(\frac{2}{3}x^2 + 4x + 6 \right) = 0$$

$$x_1 = 0$$

$$\frac{2}{3}x^2 + 4x + 6 = 0$$

$$x_2 = -3$$

$$x^2 + 6x + 9 = 0$$

$$\cancel{x_3 = 3}$$

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

Stirn

