

$$a) f(x) = \frac{1}{2}x^2 - 3x \mid *2$$

$$x^2 - 6x + 0$$

$$6/2 \pm \text{Wurzel } (-6/2)^2 + 0$$

$$x_1 = 6 \quad x_2 = 0$$

$$\int_0^6 (\frac{1}{2}x^2 - 3x) dx [\frac{1}{6}x^3 - \frac{3}{2}x^2 + c]_0^6$$

$$\frac{1}{6} * 6^3 - \frac{3}{2} * 6^2 + c - \frac{1}{6} * 0^3 - \frac{3}{2} * 0^2 + c$$

$$= 18 \text{cm}^2$$

$$b) f(x) = \frac{1}{2}x^4 + x^3 \mid *2$$

$$x^3(1/2x+1) \quad x^3 = 0 \quad x_1 = 0$$

$$1/2x+1 = 0 \mid -1$$

$$1/2x = -1 \mid :1/2$$

$$x = -2$$

$$x_1 = 0 \quad x_2 = -2$$

$$\int_0^{-2} (\frac{1}{2}x^4 + x^3) dx [0,5/5x^5 + 1/4x^4]_0^{-2}$$

$$0,5/5 * (-2)^5 + 1/4 * (-2)^4 - 0,5/5 * 0^5 + 1/4 * 0^4$$

$$0,8 \text{cm}^2$$

$$c) f(x) = -x^4 + 6x^3 - 9x^2$$

$$x^2(-x^2+6x-9) \mid * (-1) \quad x_1 = 0 \quad x_2 = 0$$

$$-x^2(+x^2-6x+9)$$

$$6/2 \pm \text{Wurzel } (-6/2)^2 - 9$$

$$x_3 = 3 \quad x_4 = 3$$

$$\int_3^0 (-x^4+6x^3-9x^2) dx [-1/5x^5+6/4x^4-9/3x^3+C]_3^0$$

$$-8,1 \text{cm}^2$$

$$d) f(x) = \frac{1}{2}x^2 - \frac{1}{2}x - 3 \mid *2$$

$$x^2 - x - 6$$

$$\frac{1}{2} \pm \text{Wurzel } (-1/2)^2 + 6$$

$$x_1 = 3 \quad x_2 = -2$$

$$\int_3^{-2} (\frac{1}{2}x^2 - \frac{1}{2}x - 3) dx [\frac{1}{6}x^3 - \frac{1}{4}x^2 - 3x + C]_3^{-2}$$

$$\frac{1}{6}*(-2)^3 - \frac{1}{4}*(-2)^2 - 3*(-2) + C - \frac{1}{6}*3^3 - \frac{1}{4}*3^2 - 3*3 + C$$

$$-\frac{1}{1/3} - 1 + 6 - 4,5 - 2,25 - 9$$

$$12,08 \text{ cm}^2$$