

## Lösung Monotonie

$$1.) f(x) = x^3 + 6x^2 - 1$$

$$f'(x) = 3x^2 + 12x$$

$$3x^2 + 12x = 0 \quad | ( )$$

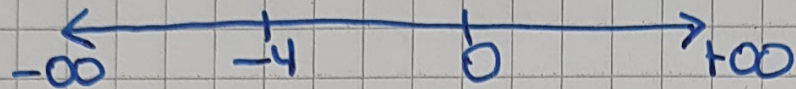
$$x(3x + 12) = 0 \quad | \text{SvNP}$$

$$x_1 = 0$$

$$3x + 12 = 0 \quad | -12$$

$$3x = -12 \quad | :3$$

$$x_2 = -4$$



$$(-\infty; -4) \quad f'(-5) = 3 \cdot (-5)^2 + 12 \cdot (-5) = 75 - 60 = 15 > 0 \text{ steigend}$$

$$(-4; 0) \quad f'(-1) = 3 \cdot (-1)^2 + 12 \cdot (-1) = 3 - 12 = -9 < 0 \text{ fallend}$$

$$(0; +\infty) \quad f'(1) = 3 \cdot 1^2 + 12 \cdot 1 = 3 + 12 = 15 > 0 \text{ steigend}$$