

Abi 85 Lsg Ana I

$$f : x \mapsto \frac{10-5x}{x^3}$$

$$1. \text{ a) } \lim_{x \rightarrow \pm\infty} \frac{10-5x}{x^3} = \lim_{x \rightarrow \pm\infty} \frac{\frac{10}{x^3} - \frac{5}{x^2}}{1} = 0$$

Der Graph hat also die x-Achse als waagerechte Asymptote.

$$\lim_{x \rightarrow 0^+} \frac{10-5x}{x^3} = +\infty; \quad \lim_{x \rightarrow 0^-} \frac{10-5x}{x^3} = -\infty;$$

$$\text{b) } \frac{10-5x}{x^3} = 0 \Rightarrow 10 - 5x = 0 \Rightarrow x_1 = 2$$

$$\text{c) } f(x) = 10 \cdot x^{-3} - 5 \cdot x^{-2}$$

$$f'(x) = -30 \cdot x^{-4} + 10 \cdot x^{-3} = \frac{10}{x^3} - \frac{30}{x^4} \checkmark$$

$$f'(x) = \frac{10x-30}{x^4}$$

$$f'(x) = 0 \Rightarrow 10x - 30 = 0 \Rightarrow x_2 = 30$$

d) Graph:

