

1. Plot the following functions and write down their properties!

(a)

$$f(x) = x^7 - 112x^2$$

(b)

$$i(x) = \frac{2x}{x^2 - 9}$$

(c)

$$h(x) = x^4 + 4x^3 + 4x^2$$

2. Derivate the following function, and find out $f(3) =!$

$$\frac{x^3 - 9x}{x^2 - 3x} - \frac{x + 2}{x^2 - 4}$$

3. Uncle Fred wants to build a house. It has to be rectanle based. The only problem is, that he has 200 l paint. 1 liter can be used for $2m^2$. Count the max volume of the house, what he can build. (The roof doesn't matter)
4. A phone company has 3500 customers. Every customer pays 25000Ft a year. If they had take 1000Ft less, they would get 300 more customers. How much is the maximum income what the company can achive?