

1. Find the extremal value of the function $f(x) = (x + 4)(3x - 7) + 4$ and decide, whether it is a minimum or a maximum point!
2. Find the extremal value of the function $f(x) = 2(x+2-x^2)+4x^2-3x+4$ and decide, whether it is a minimum or a maximum point!
3. There is a phone company with 25000 customers. Every customer pays 4000Ft a year. The company wants to have more customers, so they decide to lower the fee (a year) by 50Ft. If they do so, they will get 400 more customers. What's the maximum income they can achieve?
4. Uncle Fred wants to build a house. Before he can do that, he has to buy land. He has 33 million Forint for the whole business. The price of the house is 25 million Ft. For the fence he wants to spend 1 million Ft, in the nearest shop 1m fence costs 1000Ft. Can he buy the largest (area) land which he can encircle with the fence, when $1m^2$ land costs 150000Ft?
5. Does the function $f(x) = \frac{x^2+4x+4}{x+2}$ have an extremal vaule?