**Lesson 8**

Calculate the sketching following functions:

|  |  |
| --- | --- |
| a) | $$y=x^{3}-6x^{2}+9x$$ |
| b) | $$y=\frac{x^{2}}{x-1}$$ |
| c) | $$y=x^{2}-4x+5$$ |

**Extreme of function**

**The second derivative may be used to determine local extrema of a function under certain conditions**. If a function has a critical point for which *f*′(*x*) = 0 and

1. the second derivative is positive at this point, then *f* has a local minimum here.
2. the second derivative is negative at this point, then *f* has a local maximum here.







Find the maximum of total revenue function

 .

Find the minimum of total cost function:

 .

Find the maximum of the profit function:

 .

Find the maximum of total revenue function:

  .

At what point does the function have a local minimum (the first question) resp. maximum (the second question)?



At what point does the function have a local minimum?



At how many points does *the function g have a local minimum* and *the function f a local maximum*?

