

1) A particle is moving on the graph of the function

$$f(x) = x^3 - 3x^2 \tag{1}$$

on the interval $[0, 1]$. Find the point at which the average velocity is equal to instantaneous velocity.

Hint: First, find the average velocity in this interval and then find the derivative of this function. Remember! They are supposed to be equal at that promising point!

2) Indicate at what intervals the following function is increasing or decreasing.

$$f(x) = \frac{1}{2}x^2 - 3x + 2\ln(x) \quad (2)$$

Hint: Differentiate f . Then, write it as one fraction. Find the sign of this function at different intervals by using the method I told you in class.