# 5 Calculous

## 5.3 Derivative of a function

### 5.3.1 Compute the derivative of a function at a point
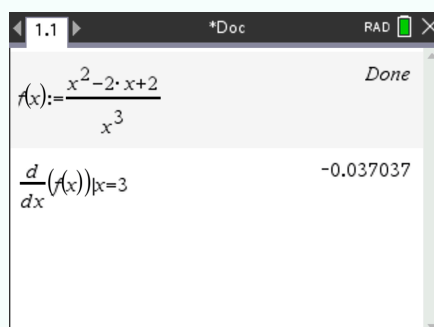
Suppose you want to evaluate $\frac{\mathrm{d}f}{\mathrm{d}x}$ at $x = 3$ of the following function:

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

① Create a new document, select Add Calculator.

② Enter '**f(x)**', press [ctrl] then [≡]. Write the expression of the function.

③ Press [menu] and select Calculus > Derivative at a Point.

④ Enter x as the Variable and 3 as the Value. Press [enter]. Write '**f(x)**' inside the brackets. Press [enter].



The result should be $-0.0370$ (rounded). Thus, $f'(3) = -0.037$.

### 5.3.2 Graph the derivative of a function

Suppose you want to draw the graph of $\frac{\mathrm{d}f}{\mathrm{d}x}$ of the following function:

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

① Create a new document, select Add Calculator.

② Enter '**f(x)**', press [ctrl] then [≡]. Write the expression of the function. Press [enter].

③ In the following line, write **'fd(x)'**. Press [ctrl] and [≡] to define the function. Then press [menu] , select Calculus > Derivative. Write **'f(x)'** inside the brackets. Press [enter] . The derivative is displayed



④ Open a new page by pressing [ctrl] and [doc] . Select Add Graphs.

⑤ Write **'f1(x)=fd(x)'**, press [enter] .

⑥ Choose an appropriate window (here Xmin=-10, Xmax=10, Ymin=-10 and Ymax=10 were chosen). The following should be displayed: