






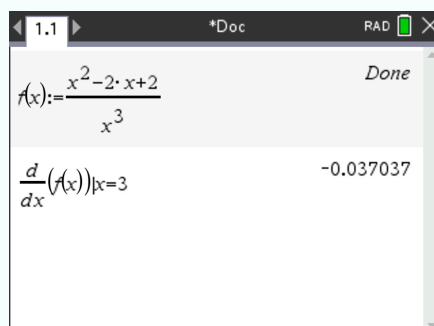
5.3 Derivative of a function

5.3.1 Compute the derivative of a function at a point

Suppose you want to evaluate $\frac{df}{dx}$ 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  then . Write the expression of the function.
- ③ Press  and select Calculus > Derivative at a Point.
- ④ Enter x as the Variable and 3 as the Value. Press . Write 'f(x)' inside the brackets. Press .






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 $\frac{df}{dx}$ 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  then . Write the expression of the function. Press .

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

The calculator screen shows the following steps and results:

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

Done

$$f(x) = \frac{d}{dx}(f(x)) \quad f(x) = \frac{-(x^2 - 4 \cdot x + 6)}{x^4}$$

- ④ Open a new page by pressing **ctrl** and **+ page 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:

