

Quiz

Directions: Carefully read each question below and answer to the best of your ability in the space provided. You **MUST** show your work to receive full credit!

1. (5 points) Use the fundamental theorem of calculus to find $F'(x)$ for

$$F(x) = \int_0^{x^2-3x+1} \sqrt{5t-4} \, dt$$

Solution: By fundamental theorem of calculus

$$\begin{aligned} F'(x) &= \sqrt{5(x^2 - 3x + 1) - 4} \cdot (x^2 - 3x + 1)' \\ &= \sqrt{5(x^2 - 3x + 1) - 4} \cdot (2x - 3). \end{aligned}$$

2. (5 points) Recall that the average value of a function $f(x)$ on $[a, b]$ is

$$f_{\text{avg}} = \frac{\int_a^b f(x) \, dx}{b - a}.$$

Suppose that the average value of $f(x)$ on $[4, 26]$ is 5. Find the value of $\int_4^{26} f(x) \, dx$.

Solution:

$$5 = \frac{\int_4^{26} f(x) \, dx}{26 - 4} \implies \int_4^{26} f(x) \, dx = 22 \cdot 5 = 110.$$

Name: _____

Section (circle one): 021 022 023 024

Question:	1	2	Total
Points:	5	5	10
Score:			