7. [12 points] Note that the problems on this page do not depend on each other.

a. [4 points] Suppose $F(x)$ is an antiderivative of $f(x) = e^{-x^2}$ such that $F(2) = 10$. Write an integral expression for the function $F(x)$. (Your expression should not involve the letters f or F.) Remember to be careful with notation.

Answer: $F(x) =$ _____

b. [4 points] Suppose $H(x)$ is an antiderivative of $h(x) = \sin(x^2)$. Write an expression for the average value of $h(x)$ on the interval $[-1, 1]$. Your expression should <u>not</u> involve any integrals but may involve function names.

Answer: Average Value = _____

c. [4 points] Suppose $G(x)$ is an antiderivative of $g(x) = \sqrt{x^4 - 1}$ for $x > 1$.
Find the arc length of the graph of $G(x)$ from $x = 2$ to $x = 3$. Show your work.
You may use your calculator to evaluate any integrals. Give the exact answer or round to two decimal places.

Answer: Arc Length = _____