

Complete the following questions by hand before you go to the computer lab. Show your work where appropriate and write the final answer in the space provided.

1. Find the following integrals.

(a) $\int (x^2 - 4x + 2) dx$

(b) $\int_0^2 (t^2 - 4t + 2) dt$

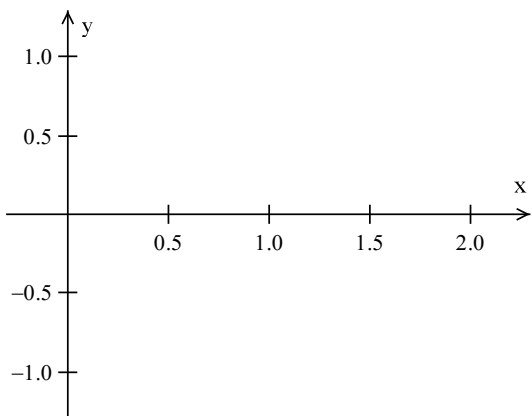
(c) $\int_0^x (t^2 - 4t + 2) dt$

2. Let $F(x) = \int_0^x (u^2 - 4u + 2) du$. Find:

(a) $\frac{d}{dx} F(x)$

(b) $\int F(x) dx$

3. Let $f(x) = \sin \frac{\pi x}{2}$. Sketch the graph, find the following, and shade a region represented by the integral in part (c) for some x between 1 and 2.



(a) $\int f(x) dx$

(b) $\int_0^1 f(x) dx$

(c) $\int_0^x f(t) dt$

From the Math 100 index screen, click on “Integration.” You will learn how to use Maple to integrate. In the following exercises add the integration constant to any indefinite integrals.

1. Use the `int` command to find the following integrals. Give the Maple command and the answer.

(a) $\int (x^2 - 4x + 2) dx$ > _____

(b) $\int_0^2 (t^2 - 4t + 2) dt$ > _____

(c) $\int_0^x (t^2 - 4t + 2) dt$ > _____

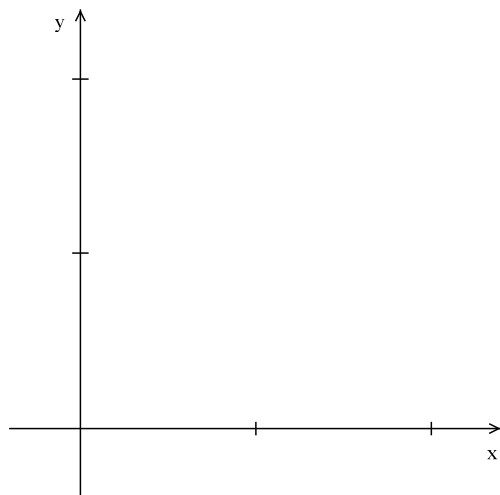
2. Write the Maple command required to evaluate $\int_0^x \frac{d}{dt} \sin(t) dt$.
> _____

3. Find $\int \frac{1}{(1-x)(1+x)} dx$. Express the result as a single, real-variable logarithm.

4. (a) Find $\int x \sin(x^4) dx$. _____

(b) What is the integral definition of `FresnelS(x)`? _____

5. Sketch the curve $y = e^{-x^2}$ and shade the region under the curve from $x = 0$ to $x = 2$. Use Maple to form an integral representing the area under the curve and then approximate it using `evalf`. Give the Maple commands and both the exact and approximate values for the area.



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